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GEOTECHNICAL INVESTIGATION AT DECEW FALLS GS FOREBAY DYKE - SUMMER, 1987

Report No 88-7-K

A. Vorauer
Engineer
Soil Sciences Section
Civil Research Department

ABSTRACT

An intensive geotechnical investigation of the forebay dyke at the DeCew Falls GS was undertaken in the summer of 1987. This report provides data collected by the Soil Sciences Section during field and laboratory testing in support of the above program. The field program included several dilatometer and piezocone soundings regularly spaced along the crest of the 4,000 ft-long dyke. The laboratory program included standard geotechnical index tests and CIU triaxial tests on undisturbed soil samples.

job	file	date	report no.
44-134-501	843.12	February 4, 1988	88-7-K

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research division

To Dr. C.F. Lee
Manager
Geotechnical and Hydraulic Engineering Dept
Design and Development Division

Attn: Mr. F. Debidin

GEOTECHNICAL INVESTIGATIONS AT DECEW FALLS GS
FOREBAY DYKE - SUMMER, 1987

1.0 INTRODUCTION

The forebay dyke at DeCew Falls GS is about 4,000 feet long and is constructed of compacted earthfill to a height of 20 to 25 feet above the ground surface. In May, 1987, a 50-foot long section of the downstream slope failed by sliding. The headpond level was lowered by approximately 4 feet and the slope was supported with a rockfill berm to mid-slope height.

The Geotechnical and Hydraulic Engineering Department was asked to undertake a geotechnical investigation to determine the present condition of the dyke. As part of this investigation, the Soil Sciences Section of the Civil Research Department initiated an intensive program of field dilatometer and piezocone testing during July/August, 1987. Laboratory index and shear strength tests were also performed on selected borehole soil samples provided by the Geotechnical and Hydraulic Engineering Department.

2.0 DILATOMETER TESTING

The results of 20 dilatometer tests are provided in Appendix A as tabulated and plotted output from the DILLY 4 data reduction program. A water level of 8 ft (2.44 m) below ground surface was input for soundings 5 to 20 located along the centreline of the forebay dyke. It should be noted that the data reduction program does not provide shear strength parameters for soils classified as silts, ie $0.9 \leq ID \leq 1.2$.

3.0 PIEZOCONE TESTING

The results of 21 piezocone soundings are provided in Appendix B as tabulated data and plots of tip resistance versus depth. The chainages associated with these soundings should be corrected by adding 350 feet to match the chainages shown in Figure 1.

A few comments are required concerning the tabulated data provided by the piezocone data reduction program.

1) The tabulated values are averaged over a depth interval and do not correspond to the unique depth value printed.

2) The tabulated tip resistance values are not compensated for the load associated with porewater pressure acting unevenly upon the cone. This load acts to reduce the apparent tip resistance of soils which generate high pore pressures during shearing.

3) The effective vertical stress is calculated based on the depth to the water table input to the analysis program. This value is used with empirical correlations to provide relative density and phi values when the soil has been classified as a sand. In the case of the DeCew earthfill dyke, none of the sounding depths were classified as sand, and therefore the need for an accurate water table depth was unnecessary.

4) Undefined soil types are generated when the friction ratio (Rf) is above 8% which is the maximum value on the empirical soil classification chart. The friction ratio = side friction/tip resistance. Undefined soil types also produce undefined shear strengths.

5) The tabulated undrained shear strength (Su) is equal to:

$(Q_c - \sigma_o)/Nk$

where σ_o = total overburden stress and Nk = cone factor which in this case was chosen equal to 15. The Su values are also influenced by the excessive porewater pressures generated during cone penetration in clayey soils.

The plotted tip resistance values, provided in Appendix B, are not averaged over a depth interval and have been corrected for excess pore pressure.

4.0 LABORATORY SOIL TESTING

The results of the laboratory testing program are provided in Appendix C as tabulated soil descriptions, natural densities and water contents, Atterberg limits and shrinkage limits, grain size analyses and effective shear strength parameters. Plots of grain size analyses and CIU triaxial test results are also provided in the Appendix.

5.0 CONCLUSIONS

The data provided in the Appendices of this report are the result of a field and laboratory testing program undertaken by the Soil Sciences Section at the

DeCew Falls GS forebay dyke. Original dilatometer and piezocone data are stored in the section files.

Approved by:

T.W. Klym
Manager
Civil Research Department

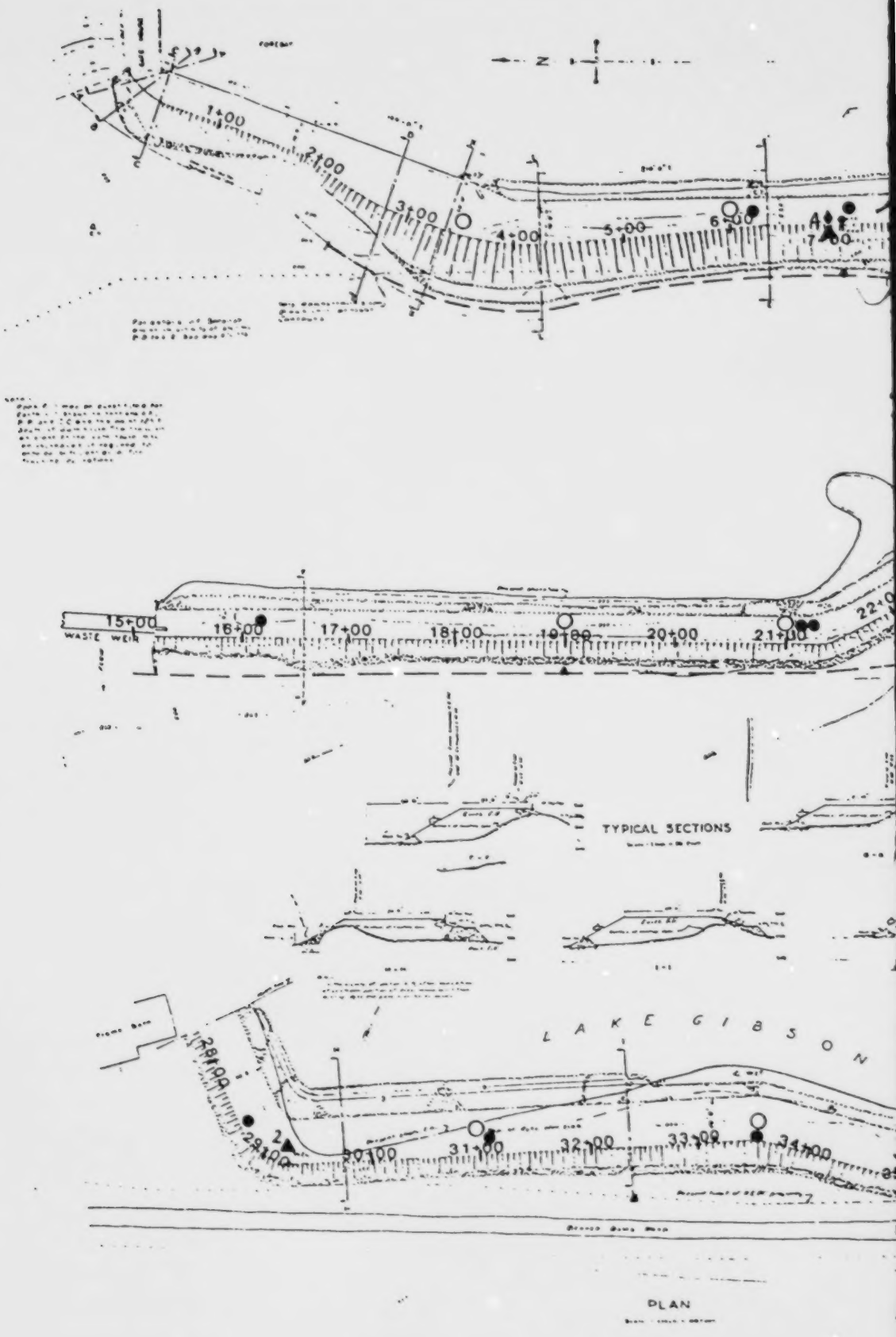
Prepared by:

A. Vorauer
Engineer
Soil Sciences Section

Reviewed by:

T.J. Carmichael
Supervising Engineer
Soil Sciences Section

AV:LM



Base map: Hydro Electric Power Commission of Onta
Dwg. File No. 47-e-337

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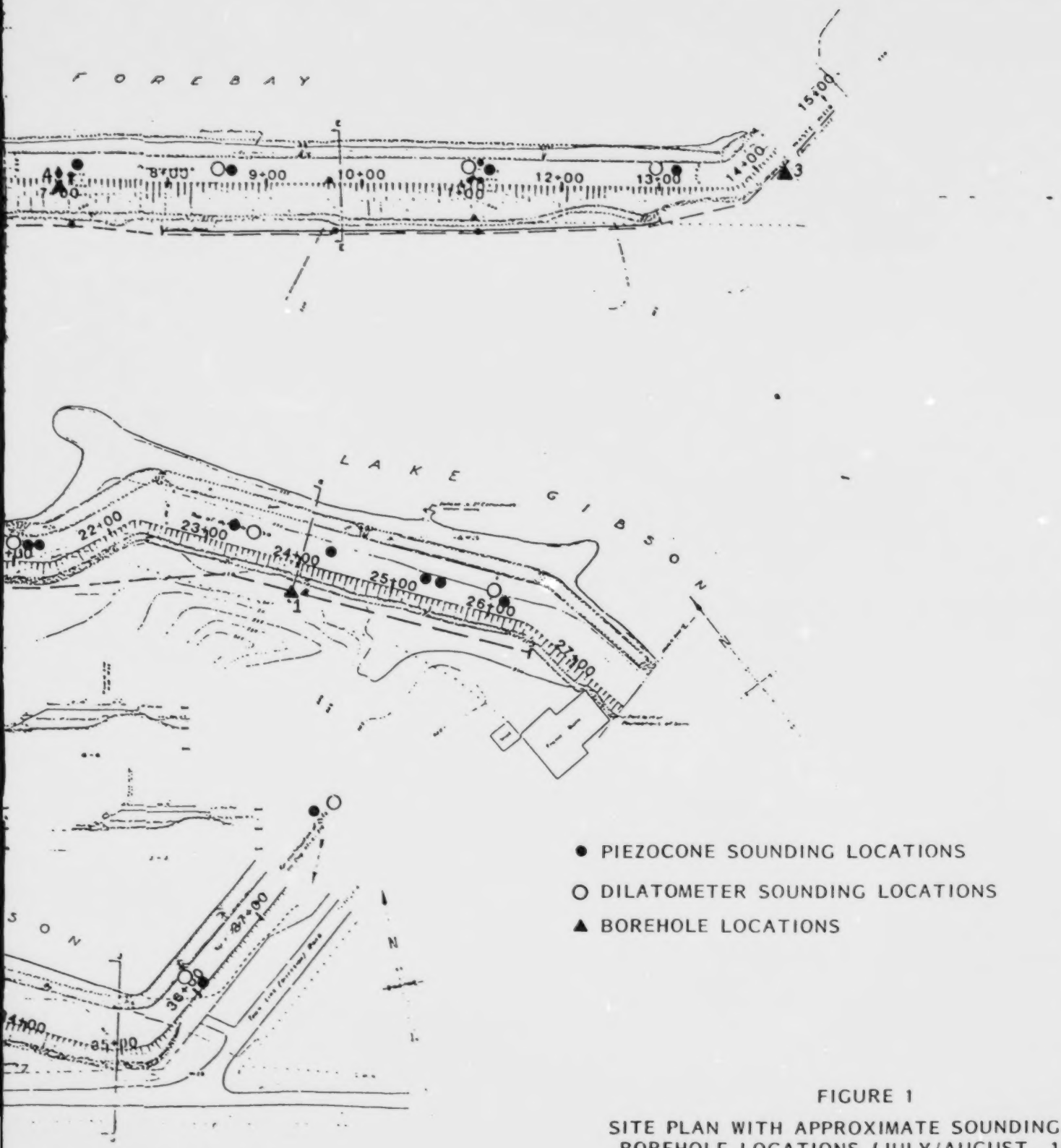


FIGURE 1

SITE PLAN WITH APPROXIMATE SOUNDING AN
BOREHOLE LOCATIONS (JULY/AUGUST, 1987

n of Ontario

APPENDIX A

ONTARIO HYDRO - CIVIL RESEARCH TEST NO. Sounding 1
FILE NAME: DECEW FALLS GS - FOREBAY DYKE BERM (NEAR POLE) ORIGINAL WATERHOUSE
FILE NUMBER: decew1.dil

RECORD OF DILATOMETER TEST NO. Sounding 1
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

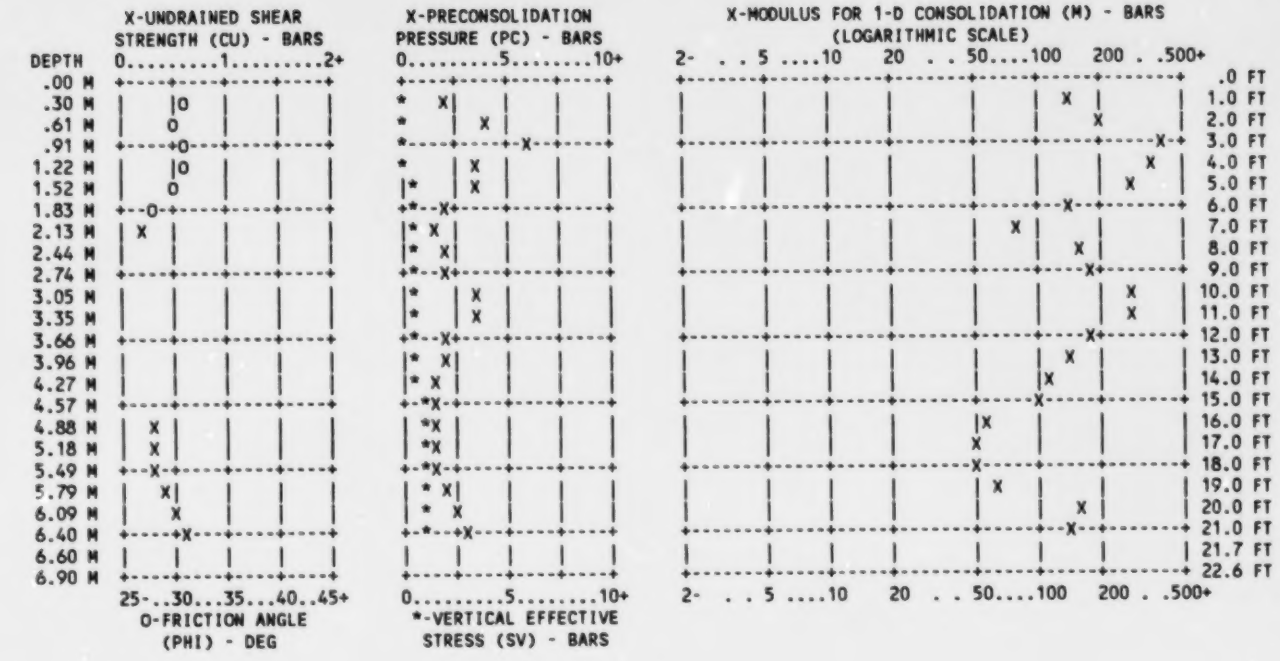
LOCATION: DRIVEN BLADE, VERTICAL - blade # 22
PERFORMED - DATE: JULY 1987
BY: MIKE GRILLS

CALIBRATION INFORMATION:
DELTA A = .17 BARS DELTA B = .47 BARS GAGE O = .00 BARS GWT DEPTH=20.00 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.30		.80	2.80	50.	1.58	15.29	.000	1.600	.059	2.23	37.88	2.18		31.4	143.8	SANDY SILT
.61		1.55	4.20	73.	1.30	14.83	.000	1.700	.109	4.19	38.33	2.16		30.2	210.4	SANDY SILT
.91		2.50	6.90	137.	1.59	15.59	.000	1.700	.159	6.24	39.20	2.21		31.5	400.0	SANDY SILT
1.22		2.20	6.75	142.	1.89	10.23	.000	1.800	.212	3.67	17.28	1.57		31.4	359.3	SILTY SAND
1.52		2.15	6.10	121.	1.61	8.16	.000	1.700	.264	3.25	12.33	1.37		29.8	278.0	SANDY SILT
1.83		1.60	4.30	75.	1.30	5.28	.000	1.700	.316	2.04	6.47	1.07		27.7	140.7	SANDY SILT
2.13		1.70	3.60	46.	.73	4.94	.000	1.700	.366	1.50	4.10	1.15	.249		81.9	CLAYEY SILT
2.44		2.25	5.30	88.	1.10	5.51	.000	1.700	.417	2.03	4.86	1.24			167.6	SILT
2.74		2.30	5.50	93.	1.15	5.01	.000	1.700	.468	1.96	4.19	1.16			169.4	SILT
3.05		3.60	8.05	170.	1.12	6.87	.000	1.800	.521	3.57	6.86	1.45			295.5	SILT
3.35		3.80	8.00	130.	.99	6.61	.000	1.800	.574	3.70	6.45	1.41			270.6	SILT
3.66		2.70	6.40	111.	1.18	4.33	.000	1.700	.627	2.09	3.34	1.05			186.7	SILT
3.96		2.50	5.65	91.	1.04	3.76	.000	1.700	.677	1.81	2.68	.94			139.4	SILT
4.27		2.10	5.10	86.	1.15	2.95	.000	1.700	.729	1.34	1.84	.77			111.2	SILT
4.57		2.10	5.05	84.	1.13	2.77	.000	1.700	.779	1.29	1.66	.73			103.3	SILT
4.88		2.15	4.10	48.	.61	2.71	.000	1.700	.831	1.34	1.61	.72	.268		55.6	CLAYEY SILT
5.18		2.50	4.25	40.	.45	2.97	.000	1.700	.881	1.63	1.85	.78	.317		50.8	SILTY CLAY
5.49		2.65	4.35	39.	.40	2.97	.000	1.700	.932	1.73	1.85	.78	.336		48.5	SILTY CLAY
5.79		3.05	5.05	50.	.45	3.21	.000	1.700	.982	2.05	2.09	.83	.390		66.1	SILTY CLAY
6.09		3.70	7.25	106.	.82	3.60	.000	1.800	1.034	2.59	2.50	.91	.475		155.7	CLAYEY SILT
6.40		4.20	7.45	95.	.65	3.89	.000	1.800	1.089	3.08	2.83	.97	.551		146.1	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 1 (FINISHED) PAGE 2

ONTARIO HYDRO - CIVIL RESEARCH TEST NO. SOUNDING 2
FILE NAME: DECEW FALLS GS - ROCK BERM 12 FT SOUTH OF CENTRELINE
FILE NUMBER: decew2.dil

RECORD OF DILATOMETER TEST NO. SOUNDING 2
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

LOCATION: DRIVEN BLADE, VERTICAL - blade # 24
PERFORMED - DATE: JULY 1987
BY: MIKE GRILLS, BRUCE WILLIAMS

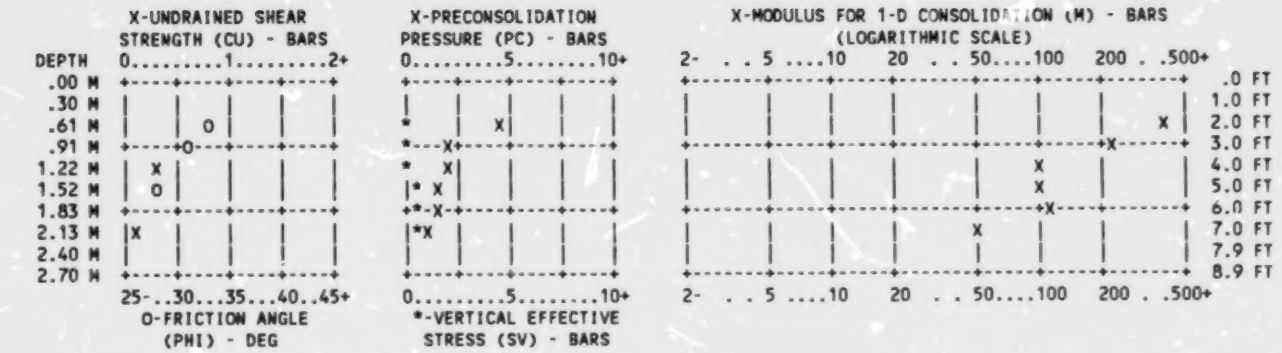
CALIBRATION INFORMATION:
DELTA A = .15 BARS DELTA B = .37 BARS GAGE 0 = .00 BARS GWT DEPTH=20.00 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		1.95	6.25	138.	2.08	16.19	.000	1.800	.118	4.50	38.10	2.23		33.3	407.2	SILTY SAND
.91		1.40	4.60	98.	1.99	8.28	.000	1.800	.171	2.03	11.89	1.34		31.1	226.9	SILTY SAND
1.22		1.60	3.30	43.	.73	7.59	.000	1.600	.223	1.78	8.01	1.54	.260		95.5	CLAYEY SILT
1.52		1.10	3.25	59.	1.46	4.33	.000	1.600	.270	1.29	4.76	.96		27.8	100.3	SANDY SILT
1.83		1.70	3.90	61.	1.00	5.52	.000	1.700	.320	1.56	4.87	1.24			116.7	SILT
2.13		1.10	2.60	36.	.86	3.26	.000	1.600	.369	.79	2.14	.84	.149		48.9	CLAYEY SILT

END OF SOUNDING

TEST NO. SOUNDING 2 (CONTINUED) PAGE 1



END OF SOUNDING

TEST NO. SOUNDING 2 (FINISHED) PAGE 2

ONTARIO HYDRO - CIVIL RESEARCH TEST NO. SOUNDING 3
FILE NAME: DECEW FALLS GS - ROCK BERM 10 FT SOUTH OF CENTRELINE
FILE NUMBER: decew3.dil

RECORD OF DILATOMETER TEST NO. SOUNDING 3
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

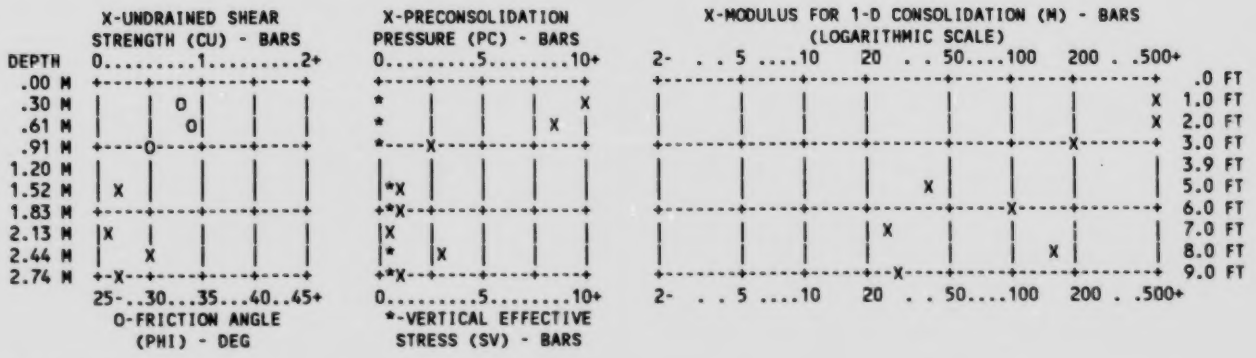
LOCATION: DRIVEN BLADE, VERTICAL - blade # 22
PERFORMED - DATE: JULY 1987
BY: MIKE GRILLS, BRUCE WILLIAMS

CALIBRATION INFORMATION:
DELTA A = .17 BARS DELTA B = .30 BARS GAGE 0 = .00 BARS GWT DEPTH=20.00 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	U0 (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.30		2.40	6.50	132.	1.60	40.48	.000	1.700	.059	14.87	*****	5.14		33.5	505.7	SANDY SILT
.61		2.70	8.20	183.	2.02	23.02	.000	1.900	.114	8.49	74.65	3.03		33.9	602.8	SILTY SAND
.91		1.45	4.15	81.	1.55	9.05	.000	1.700	.167	2.47	14.83	1.47		29.9	195.3	SANDY SILT
1.52		1.00	2.15	25.	.63	4.28	.000	1.600	.266	.87	3.27	1.04	.151		40.4	CLAYEY SILT
1.83		1.35	3.35	56.	1.11	4.59	.000	1.600	.314	1.15	3.66	1.09			96.4	SILT
2.13		1.00	2.00	19.	.49	3.16	.000	1.600	.361	.74	2.05	.82	.141		25.5	SILTY CLAY
2.44		3.00	5.40	70.	.66	7.47	.000	1.700	.412	3.21	7.81	1.53	.470		154.8	CLAYEY SILT
2.74		1.55	2.55	19.	.33	3.68	.000	1.600	.460	1.19	2.59	.92	.217		28.5	CLAY

END OF SOUNDING



END OF SOUNDING

TEST NO. SOUNDING 3 (FINISHED)

ONTARIO HYDRO - CIVIL RESEARCH TEST NO. SOUNDING 4
FILE NAME: DECEW FALLS GS - ROCK BERM 17 FT NORTH OF CENTRELINE
FILE NUMBER: decew4.dil

RECORD OF DILATOMETER TEST NO. SOUNDING 4
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

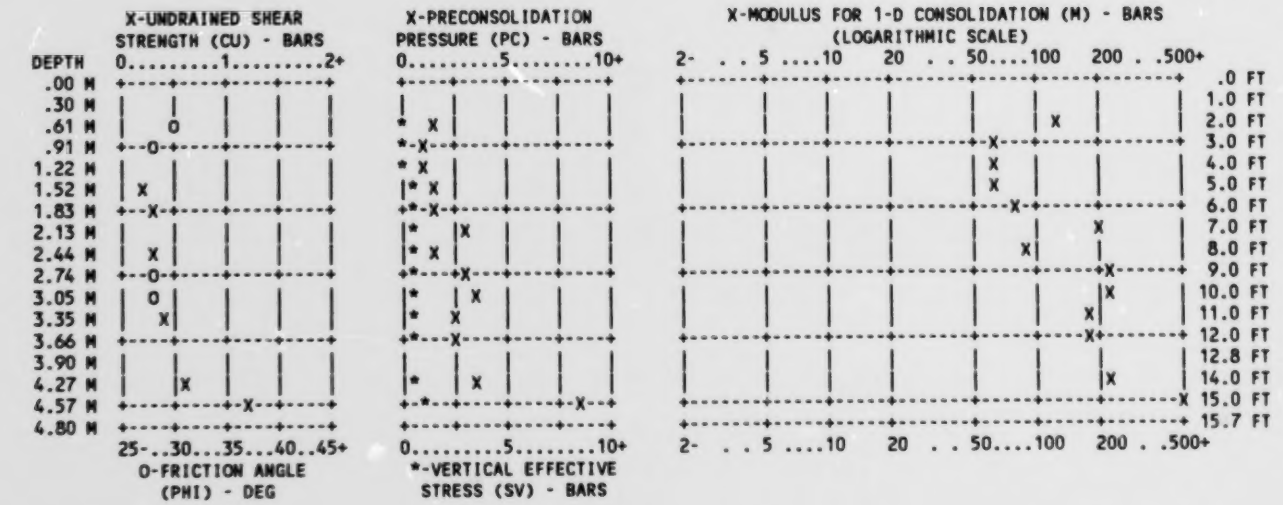
LOCATION: DRIVEN BLADE, VERTICAL - blade # 22
PERFORMED - DATE: JULY 1987
BY: MIKE GRILLS, BRUCE WILLIAMS

CALIBRATION INFORMATION:
DELTA A = .17 BARS DELTA B = .31 BARS GAGE 0 = .00 BARS GWT DEPTH=20.00 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		.85	2.91	58.	1.76	7.97	.000	1.600	.118	1.37	11.58	1.33		30.2	131.6	SANDY SILT
.91		.62	2.09	36.	1.40	4.49	.000	1.600	.165	.83	5.04	.98		27.7	62.0	SANDY SILT
1.22		.95	2.40	35.	.95	5.01	.000	1.600	.214	.90	4.19	1.16			63.9	SILT
1.52		1.35	2.78	35.	.68	5.64	.000	1.600	.261	1.32	5.05	1.26	.210		66.3	CLAYEY SILT
1.83		1.68	3.25	40.	.64	5.80	.000	1.600	.310	1.63	5.26	1.29	.258		77.2	CLAYEY SILT
2.13		2.80	5.75	90.	.91	7.95	.000	1.700	.358	3.08	8.61	1.59			204.2	SILT
2.44		1.90	3.78	51.	.74	4.88	.000	1.700	.410	1.65	4.02	1.14	.275		90.3	CLAYEY SILT
2.74		2.35	6.10	119.	1.46	5.12	.000	1.700	.460	2.78	6.05	1.04		28.2	220.7	SANDY SILT
3.05		2.70	6.50	121.	1.29	5.27	.000	1.800	.513	3.31	6.46	1.07		27.7	226.5	SANDY SILT
3.35		3.00	6.05	94.	.89	5.39	.000	1.700	.565	2.65	4.69	1.22	.429		175.8	CLAYEY SILT
3.66		3.00	6.10	95.	.91	4.93	.000	1.700	.616	2.52	4.09	1.15			170.8	SILT
4.27		4.05	7.90	123.	.87	5.62	.000	1.800	.721	3.61	5.01	1.26	.577		235.7	CLAYEY SILT
4.57		7.35	13.55	208.	.83	9.32	.000	1.950	.776	8.56	11.03	1.76	1.169		506.2	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. SOUNDING 4 (FINISHED) PAGE 2

Ontario Hydro - Civil Research TEST NO. Sounding 5
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew5.dil

RECORD OF DILATOMETER TEST NO. Sounding 5
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

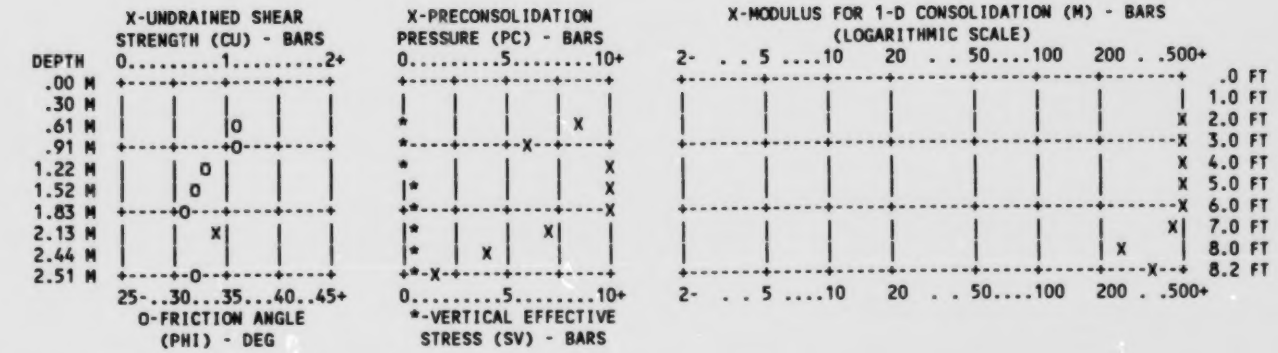
LOCATION: PC-1 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 3+50)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .17 BARS DELTA B = .33 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		3.10	11.20	277.	2.76	24.49	.000	1.900	.118	8.62	73.03	3.12		36.3	927.1	SILTY SAND
.91		3.10	11.40	284.	2.84	16.56	.000	1.900	.174	6.08	34.98	2.19		35.7	846.2	SILTY SAND
1.22		4.10	11.80	262.	1.93	16.87	.000	1.900	.232	9.79	42.26	2.32		32.9	785.7	SILTY SAND
1.52		6.20	16.00	339.	1.65	20.47	.000	1.950	.288	18.71	64.86	2.77		32.4	1077.0	SANDY SILT
1.83		5.30	13.20	270.	1.52	14.67	.000	1.950	.348	12.36	35.53	2.11		31.1	771.8	SANDY SILT
2.13		5.10	9.90	157.	.89	12.55	.000	1.800	.403	7.07	17.54	2.11	.880		425.3	CLAYEY SILT
2.44		3.60	7.30	117.	.93	7.89	.000	1.800	.458	3.89	8.50	1.58			263.7	SILT
2.51		2.00	8.50	219.	3.38	4.02	.007	1.800	.463	1.63	3.52	.80		32.3	373.6	SAND

END OF SOUNDING



END OF SOUNDING

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew6.dil

TEST NO. Sounding 6

RECORD OF DILATOMETER TEST NO. Sounding 6
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

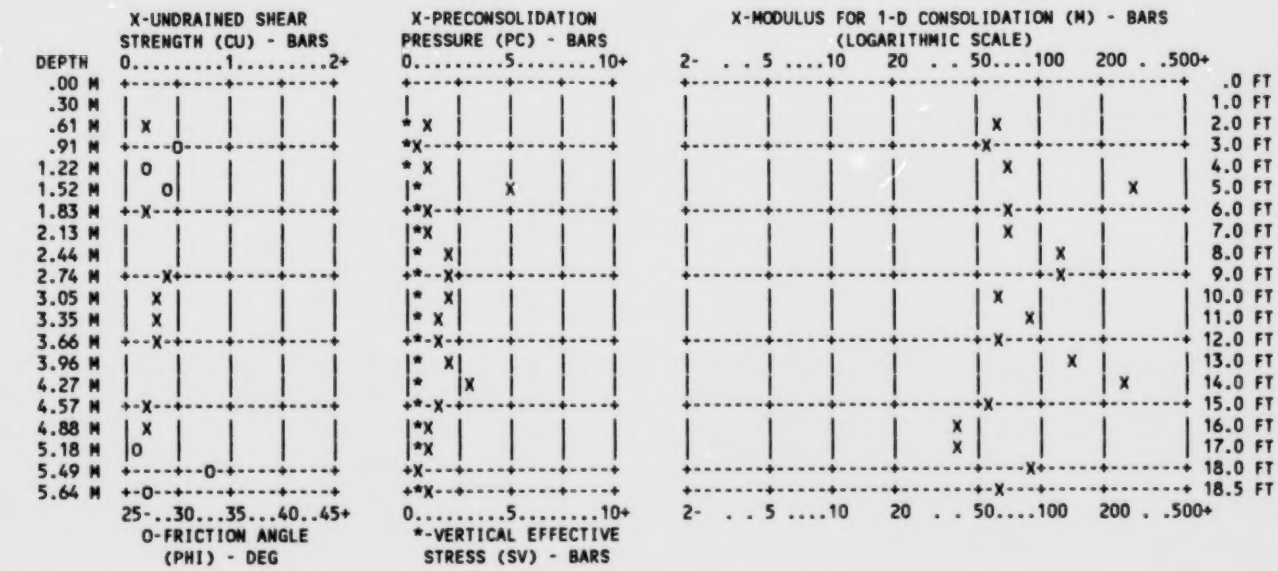
LOCATION: PC-2 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 6+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .18 BARS DELTA B = .29 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		.90	2.10	27.	.73	8.84	.000	1.600	.118	1.20	10.16	1.70	.166		63.2	CLAYEY SILT
.91		.30	1.90	41.	2.80	2.54	.000	1.700	.167	.37	2.24	.70		29.6	53.2	SILTY SAND
1.22		.80	2.40	41.	1.28	4.26	.000	1.600	.217	1.03	4.76	.96		27.3	68.5	SANDY SILT
1.52		2.60	6.10	110.	1.21	9.91	.000	1.700	.265	4.95	18.64	1.60		28.8	275.0	SANDY SILT
1.83		1.20	2.80	41.	.90	4.19	.000	1.600	.316	1.00	3.17	1.02	.175		67.0	CLAYEY SILT
2.13		1.10	2.90	48.	1.15	3.35	.000	1.600	.363	.81	2.23	.86			68.7	SILT
2.44		2.00	4.30	67.	.92	5.06	.000	1.700	.413	1.76	4.25	1.17			121.1	SILT
2.74		2.40	4.60	63.	.74	5.68	.029	1.700	.433	2.21	5.10	1.27	.352		121.4	CLAYEY SILT
3.05		2.10	3.60	38.	.50	4.77	.060	1.700	.455	1.76	3.88	1.12	.296		65.3	SILTY CLAY
3.35		2.00	4.00	56.	.80	4.24	.089	1.700	.475	1.53	3.23	1.03	.267		90.9	CLAYEY SILT
3.66		2.10	3.60	38.	.51	4.25	.120	1.700	.497	1.61	3.24	1.03	.280		60.9	SILTY CLAY
3.96		2.50	5.30	85.	1.01	4.67	.149	1.700	.517	1.94	3.75	1.10			147.7	SILT
4.27		3.50	7.20	118.	1.02	6.18	.180	1.800	.540	3.14	5.82	1.35			237.7	SILT
4.57		2.00	3.60	41.	.62	3.41	.209	1.600	.561	1.29	2.30	.87	.241		57.6	CLAYEY SILT
4.88		1.60	3.10	38.	.73	2.57	.239	1.600	.579	.86	1.48	.69	.174		42.0	CLAYEY SILT
5.18		1.10	2.90	48.	1.48	1.58	.269	1.600	.597	.99	1.65	.67		25.9	41.2	SANDY SILT
5.49		.50	3.70	99.	11.74	.40	.299	1.700	.616	.32	.51	.34		33.0	84.5	SAND
5.64		1.20	3.60	70.	2.09	1.55	.314	1.700	.627	.97	1.54	.64		27.2	59.8	SILTY SAND

END OF SOUNDING


X-UNDRAINED SHEAR STRENGTH (CU) - BARS
X-PRECONSOLIDATION PRESSURE (PC) - BARS
X-MODULUS FOR 1-D CONSOLIDATION (M) - BARS (LOGARITHMIC SCALE)
DEPTH
0.....1.....2+
0.....5.....10+
2- . . 5 ....10 20 . . 50....100 200 . .500+
.00 M .0 FT
.30 M 1.0 FT
.61 M 2.0 FT
.91 M 3.0 FT
1.22 M 4.0 FT
1.52 M 5.0 FT
1.83 M 6.0 FT
2.13 M 7.0 FT
2.44 M 8.0 FT
2.74 M 9.0 FT
3.05 M 10.0 FT
3.35 M 11.0 FT
3.66 M 12.0 FT
3.96 M 13.0 FT
4.27 M 14.0 FT
4.57 M 15.0 FT
4.88 M 16.0 FT
5.18 M 17.0 FT
5.49 M 18.0 FT
5.64 M 18.5 FT
25-..30...35...40..45+
O-FRICTION ANGLE (PHI) - DEG
*-VERTICAL EFFECTIVE STRESS (SV) - BARS

END OF SOUNDING

TEST NO. Sounding 6 (FINISHED) PAGE 2

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew7.dil

TEST NO. Sounding 7

RECORD OF DILATOMETER TEST NO. Sounding 7
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

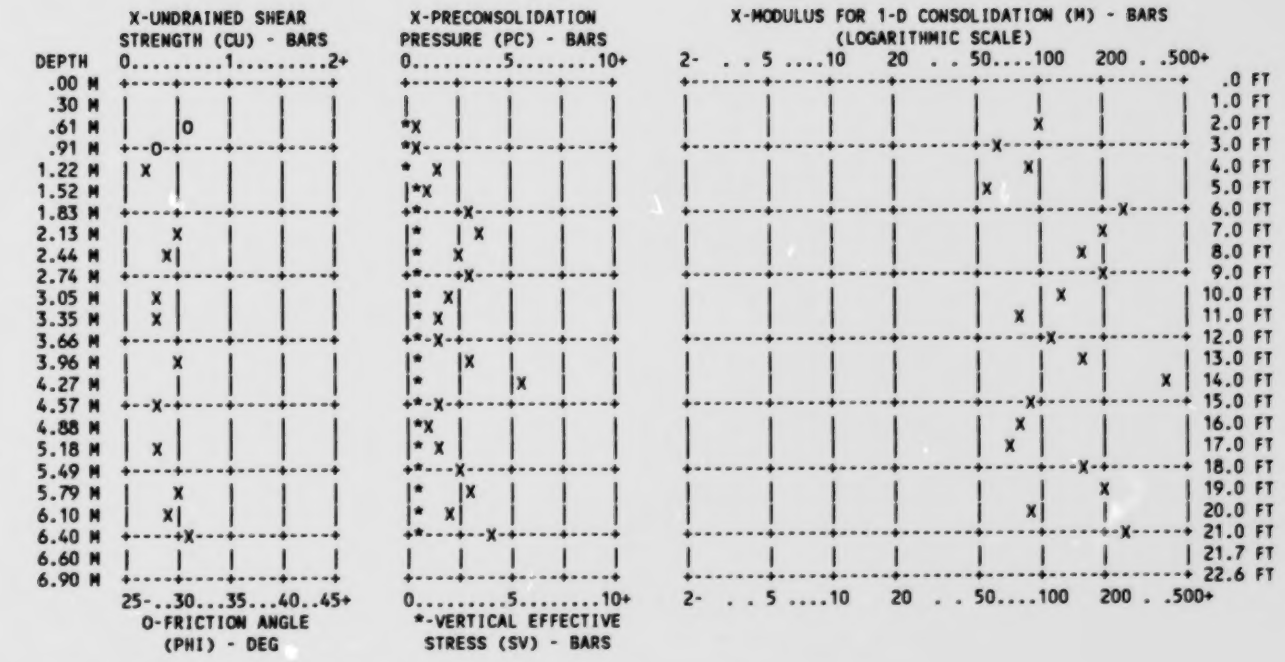
LOCATION: PC-3 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 8+50)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .20 BARS DELTA B = .31 BARS GAGE 0 = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		.50	2.50	54.	2.50	5.30	.000	1.700	.118	.66	5.61	.99		31.2	104.7	SILTY SAND
.91		.50	2.10	40.	1.77	3.88	.000	1.600	.167	.66	3.97	.89		28.4	63.6	SANDY SILT
1.22		1.40	3.00	40.	.74	7.18	.000	1.600	.215	1.58	7.34	1.49	.234		85.9	CLAYEY SILT
1.52		.90	2.40	36.	.99	4.00	.000	1.600	.262	.77	2.95	.99			57.2	SILT
1.83		2.60	5.90	102.	1.10	8.51	.000	1.700	.313	2.99	9.58	1.66			237.9	SILT
2.13		3.10	5.90	83.	.75	8.79	.000	1.700	.363	3.65	10.06	1.70	.507		197.6	CLAYEY SILT
2.44		2.50	5.20	80.	.89	6.25	.000	1.700	.414	2.45	5.92	1.36	.379		161.8	CLAYEY SILT
2.74		3.00	6.20	98.	.93	6.98	.029	1.700	.435	3.06	7.03	1.46			209.7	SILT
3.05		2.20	4.60	69.	.88	4.92	.060	1.700	.456	1.86	4.08	1.15	.309		123.0	CLAYEY SILT
3.35		2.00	3.90	51.	.72	4.28	.089	1.700	.477	1.56	3.28	1.04	.272		82.9	CLAYEY SILT
3.66		2.10	4.50	69.	.95	4.19	.120	1.700	.498	1.58	3.17	1.02			112.1	SILT
3.96		3.20	6.00	83.	.77	6.05	.149	1.700	.519	2.91	5.62	1.33	.455		166.0	CLAYEY SILT
4.27		5.00	9.90	160.	.96	8.87	.180	1.800	.542	5.53	10.20	1.70			380.6	SILT
4.57		2.10	4.20	58.	.83	3.57	.209	1.700	.564	1.39	2.47	.90	.256		84.5	CLAYEY SILT
4.88		1.90	4.00	58.	.94	3.04	.239	1.700	.585	1.13	1.93	.79			75.7	SILT
5.18		2.50	4.30	47.	.57	3.91	.269	1.700	.606	1.72	2.84	.97	.308		72.2	SILTY CLAY
5.49		3.20	6.30	94.	.92	4.74	.299	1.700	.627	2.41	3.84	1.12			165.2	SILT
5.79		3.90	7.20	102.	.81	5.60	.329	1.800	.649	3.23	4.98	1.26	.517		194.5	CLAYEY SILT
6.10		3.00	5.10	58.	.60	4.11	.359	1.700	.672	2.07	3.08	1.01	.364		92.1	CLAYEY SILT
6.40		4.50	8.50	127.	.89	5.96	.389	1.800	.694	3.81	5.50	1.31	.598		251.7	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 7 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew8.dil

TEST NO. Sounding 8

RECORD OF DILATOMETER TEST NO. Sounding 8
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

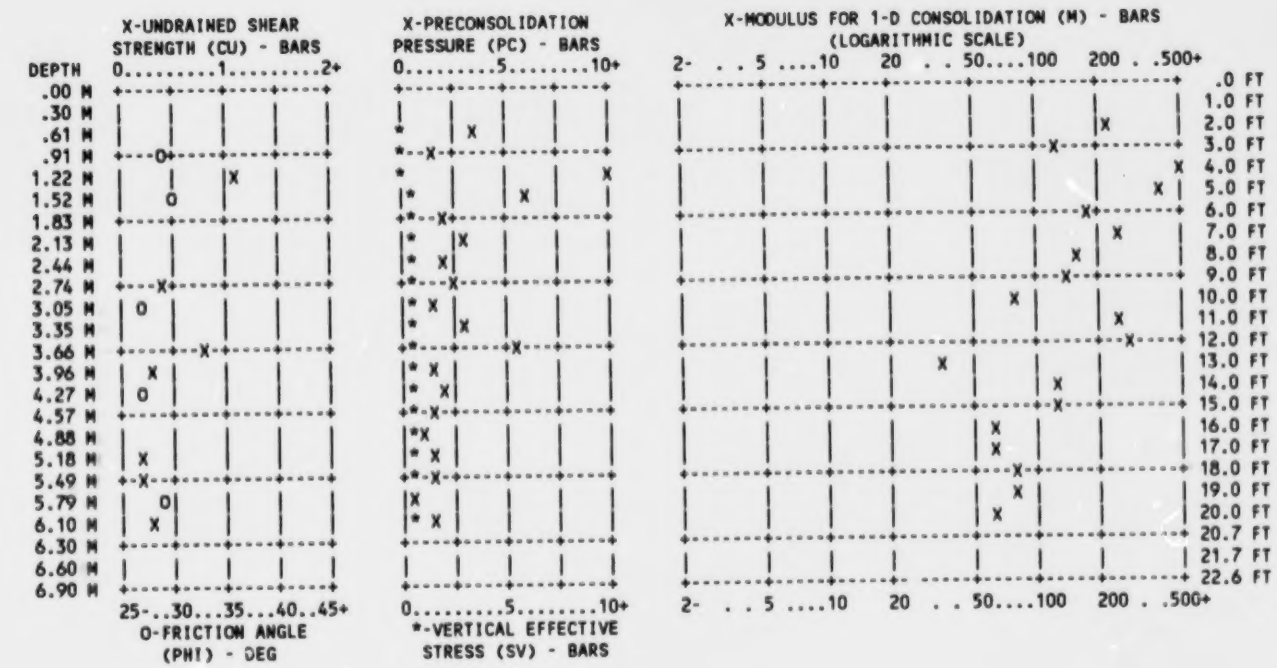
LOCATION: PC-4 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 11+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .20 BARS DELTA B = .34 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		1.90	4.50	75.	1.08	16.92	.000	1.700	.118	3.30	27.98	2.52			225.0	SILT
.91		1.00	3.10	57.	1.46	6.74	.000	1.600	.167	1.54	9.22	1.22		28.8	120.3	SANDY SILT
1.22		5.20	10.10	159.	.88	23.74	.000	1.800	.218	10.35	47.44	3.06	1.058		527.2	CLAYEY SILT
1.52		3.00	7.70	152.	1.46	11.03	.000	1.800	.271	5.80	21.38	1.70		30.1	393.0	SANDY SILT
1.83		2.00	4.90	86.	1.19	6.42	.000	1.700	.325	2.00	6.16	1.38			177.3	SILT
2.13		2.90	6.40	108.	1.05	7.85	.000	1.800	.376	3.17	8.44	1.58			243.6	SILT
2.44		2.20	5.10	86.	1.09	5.32	.000	1.700	.429	1.97	4.59	1.21			161.0	SILT
2.74		2.70	5.20	71.	.74	6.16	.029	1.700	.450	2.60	5.79	1.34	.404		143.4	CLAYEY SILT
3.05		1.30	3.60	64.	1.37	2.88	.060	1.600	.470	1.36	2.90	.81		26.8	82.5	SANDY SILT
3.35		3.10	7.00	122.	1.16	6.21	.089	1.800	.490	2.87	5.85	1.35			248.3	SILT
3.66		4.80	8.60	119.	.73	9.17	.120	1.800	.515	5.53	10.75	1.74	.759		286.4	CLAYEY SILT
3.96		2.10	3.30	24.	.33	3.96	.149	1.600	.535	1.55	2.90	.98	.276		37.3	CLAY
4.27		2.00	5.00	90.	1.36	3.42	.180	1.700	.555	1.97	3.54	.86		27.1	130.2	SANDY SILT
4.57		2.20	5.00	82.	1.14	3.61	.209	1.700	.576	1.45	2.51	.91			122.8	SILT
4.88		1.70	3.70	53.	.97	2.67	.239	1.600	.595	.93	1.57	.71			62.6	SILT
5.18		2.10	4.00	50.	.73	3.19	.269	1.700	.615	1.28	2.08	.83	.243		66.4	CLAYEY SILT
5.49		2.20	4.30	57.	.81	3.18	.299	1.700	.636	1.31	2.06	.82	.250		76.3	CLAYEY SILT
5.79		.90	3.90	90.	3.98	.99	.329	1.700	.656	.69	1.05	.52		29.0	76.2	SAND
6.10		2.60	4.30	42.	.51	3.52	.359	1.700	.678	1.63	2.41	.89	.302		60.4	SILTY CLAY

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 8 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew9.dil

TEST NO. Sounding 9

RECORD OF DILATOMETER TEST NO. Sounding 9
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

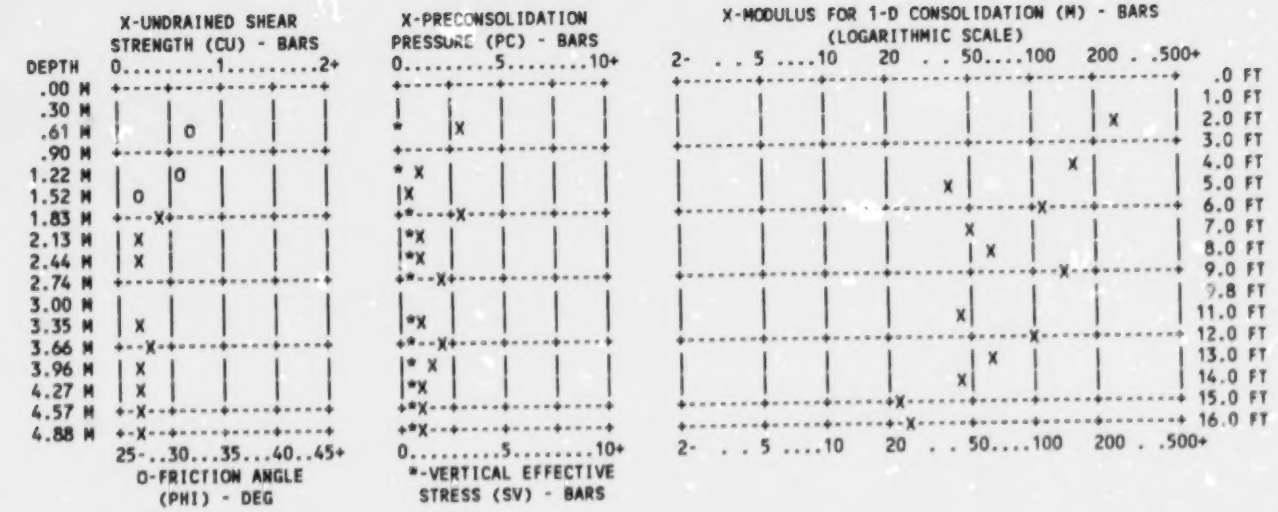
LOCATION: PC-5 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 13+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .20 BARS DELTA B = .33 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		1.40	4.40	90.	1.76	12.51	.000	1.700	.118	2.98	25.26	1.84		31.5	244.1	SANDY SILT
1.22		1.00	4.00	90.	2.41	4.90	.000	1.700	.220	1.11	5.07	.95		30.7	166.7	SILTY SAND
1.52		.50	2.00	35.	1.56	2.43	.000	1.600	.268	.64	2.37	.75		27.0	40.2	SANDY SILT
1.83		2.50	4.40	50.	.55	8.26	.000	1.700	.319	2.91	9.14	1.63	.413		115.0	SILTY CLAY
2.13		1.10	2.60	35.	.81	3.41	.000	1.600	.367	.84	2.30	.87	.157		49.9	CLAYEY SILT
2.44		1.40	3.10	43.	.80	3.71	.000	1.600	.416	1.09	2.62	.93	.198		63.8	CLAYEY SILT
2.74		2.10	4.70	75.	1.00	4.98	.029	1.700	.435	1.81	4.15	1.16			136.1	SILT
3.35		1.60	3.00	32.	.55	3.52	.089	1.600	.474	1.14	2.41	.89	.211		45.3	SILTY CLAY
3.66		2.40	4.50	57.	.69	4.87	.120	1.700	.494	1.98	4.00	1.14	.330		101.0	CLAYEY SILT
3.96		1.90	3.60	43.	.65	3.68	.149	1.700	.514	1.33	2.59	.92	.242		63.0	CLAYEY SILT
4.27		1.50	3.10	39.	.77	2.75	.180	1.600	.534	.88	1.64	.73	.175		46.4	CLAYEY SILT
4.57		1.70	2.70	17.	.30	3.02	.209	1.600	.552	1.05	1.90	.79	.203		21.8	CLAY
4.88		1.80	2.90	21.	.35	3.04	.239	1.600	.570	1.09	1.92	.79	.212		26.6	CLAY

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 9 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew10.dil

TEST NO. Sounding 10

RECORD OF DILATOMETER TEST NO. Sounding 10
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

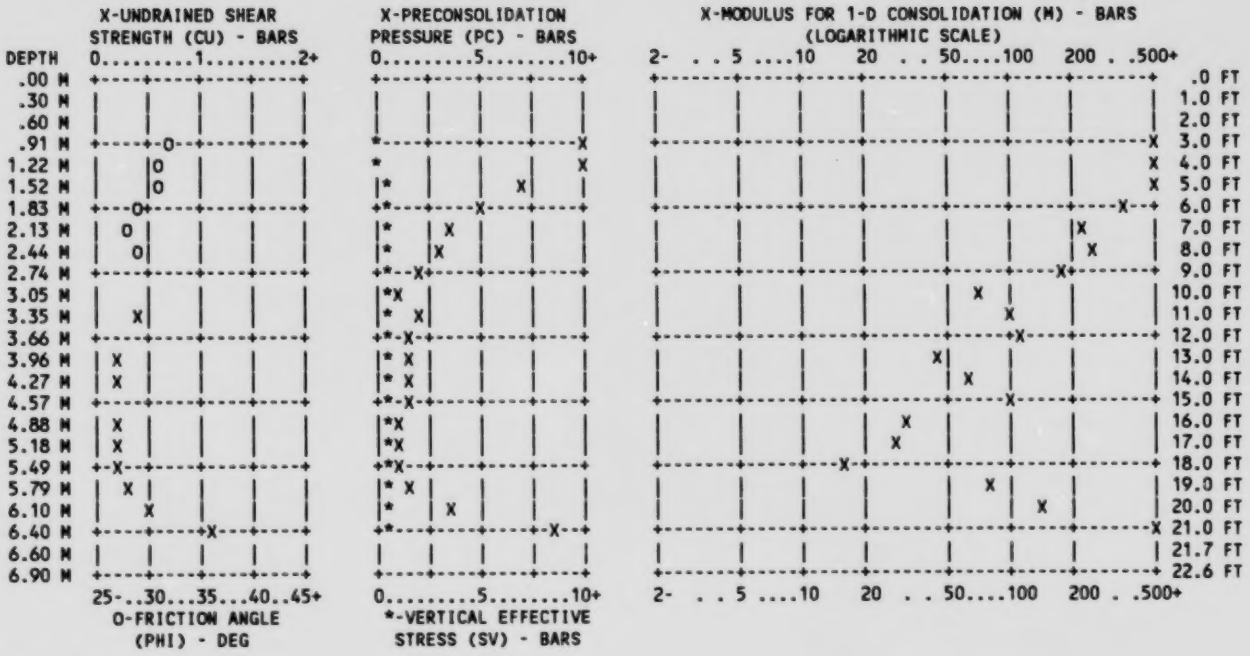
LOCATION: PC-6 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 16+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .19 BARS DELTA B = .53 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.91		4.00	10.00	192.	1.41	22.18	.000	1.800	.177	14.32	80.88	3.00		31.6	626.0	SANDY SILT
1.22		4.10	10.30	200.	1.43	17.33	.000	1.800	.232	11.55	49.82	2.43		31.1	603.1	SANDY SILT
1.52		3.60	9.90	203.	1.67	12.33	.000	1.800	.285	7.13	25.03	1.83		31.1	548.6	SANDY SILT
1.83		3.00	7.90	152.	1.47	8.78	.000	1.800	.340	4.86	14.30	1.45		29.5	361.6	SANDY SILT
2.13		2.50	6.20	109.	1.23	6.50	.000	1.700	.391	3.53	9.03	1.21		28.0	225.4	SANDY SILT
2.44		2.50	6.80	130.	1.50	5.67	.000	1.700	.443	3.10	7.01	1.10		28.5	254.6	SANDY SILT
2.74		2.50	5.90	98.	1.11	5.45	.029	1.700	.463	2.22	4.78	1.23			185.4	SILT
3.05		1.50	3.60	50.	.93	3.23	.060	1.600	.483	1.02	2.11	.83			68.7	SILT
3.35		2.60	4.80	54.	.59	5.23	.089	1.700	.502	2.25	4.48	1.20	.367		99.0	SILTY CLAY
3.66		2.00	4.70	72.	1.05	3.77	.120	1.700	.524	1.40	2.68	.94			110.2	SILT
3.96		1.90	3.50	32.	.49	3.50	.149	1.600	.543	1.30	2.39	.89	.240		45.6	SILTY CLAY
4.27		2.00	3.90	43.	.63	3.47	.180	1.700	.562	1.33	2.36	.88	.246		60.9	CLAYEY SILT
4.57		2.30	4.90	68.	.90	3.75	.209	1.700	.583	1.56	2.67	.94			103.7	SILT
4.88		2.00	3.40	25.	.37	3.18	.239	1.600	.603	1.24	2.06	.82	.237		32.8	SILTY CLAY
5.18		1.70	3.10	25.	.45	2.56	.269	1.600	.621	.91	1.47	.69	.186		27.3	SILTY CLAY
5.49		1.90	3.00	14.	.23	2.77	.299	1.600	.639	1.06	1.67	.73	.211		16.4	CLAY
5.79		2.60	4.80	54.	.65	3.63	.329	1.700	.658	1.67	2.53	.91	.305		79.0	CLAYEY SILT
6.10		4.00	6.80	76.	.59	5.47	.359	1.800	.681	3.28	4.81	1.24	.527		142.7	SILTY CLAY
6.40		7.50	14.20	218.	.90	9.91	.389	1.950	.706	8.58	12.14	1.83	1.149		542.8	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 10 (FINISHED)

Ontario Hydro - Civil Research TEST NO. Sounding 11
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew11.dil

RECORD OF DILATOMETER TEST NO. Sounding 11
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

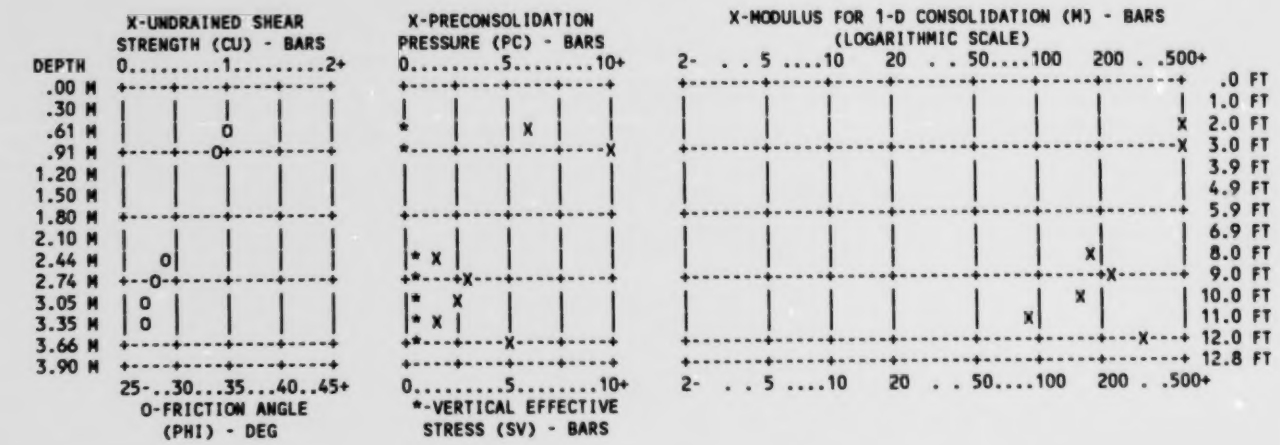
LOCATION: PC-7 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 19+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .18 BARS DELTA B = .50 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		2.50	9.00	212.	2.56	20.25	.000	1.900	.118	6.25	52.95	2.65		35.3	671.7	SILTY SAND
.91		4.00	12.10	270.	2.05	21.90	.000	1.900	.174	11.74	67.49	2.90		33.9	876.5	SILTY SAND
2.44		1.50	5.50	121.	2.30	3.35	.000	1.800	.452	1.42	3.15	.80		29.3	181.6	SILTY SAND
2.74		2.40	6.30	117.	1.41	5.04	.029	1.700	.474	2.82	5.95	1.04		28.0	215.3	SANDY SILT
3.05		2.10	5.40	95.	1.32	4.22	.060	1.700	.495	2.32	4.68	.95		27.4	158.1	SANDY SILT
3.35		1.50	4.10	70.	1.35	2.90	.089	1.700	.516	1.51	2.92	.81		26.7	90.3	SANDY SILT
3.66		4.50	9.10	143.	.94	8.10	.120	1.800	.539	4.78	8.87	1.61			327.0	SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 11 (FINISHED) PAGE 2

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls - Geotechnical Investigations
FILE NUMBER: decew12.dil

TEST NO. Sounding 12

RECORD OF DILATOMETER TEST NO. Sounding 12
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

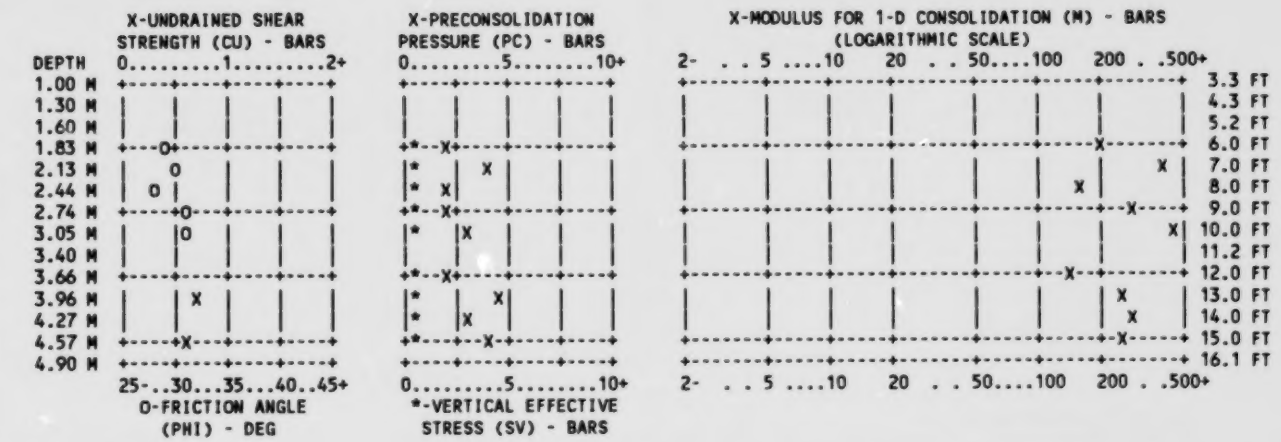
LOCATION: PC-8 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 21+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .18 BARS DELTA B = .45 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
1.83		1.80	5.50	112.	1.76	5.16	.000	1.700	.354	2.08	5.88	1.02		29.1	209.4	SANDY SILT
2.13		3.00	8.40	174.	1.70	7.25	.000	1.800	.406	4.06	10.01	1.26		29.8	381.3	SANDY SILT
2.44		1.80	5.00	94.	1.46	4.04	.000	1.700	.459	1.99	4.33	.92		27.7	151.8	SANDY SILT
2.74		2.00	7.50	177.	2.68	3.97	.029	1.800	.481	1.79	3.73	.84		30.7	297.7	SILTY SAND
3.05		3.00	10.10	236.	2.43	5.52	.060	1.900	.507	3.03	5.99	1.01		31.1	462.4	SILTY SAND
3.66		2.50	5.50	86.	1.02	4.40	.120	1.700	.555	1.90	3.42	1.06			145.2	SILT
3.96		4.40	8.30	119.	.80	7.40	.149	1.800	.577	4.44	7.70	1.52	.651		261.6	CLAYEY SILT
4.27		3.70	8.20	141.	1.16	5.84	.180	1.800	.601	3.19	5.31	1.29			277.4	SILT
4.57		4.30	8.10	115.	.81	6.58	.209	1.800	.625	4.01	6.42	1.40	.609		239.9	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 12 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew13.dil

TEST NO. Sounding 13

RECORD OF DILATOMETER TEST NO. Sounding 13
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

LOCATION: PC-9 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 23+50)
PERFORMED - DATE: August 1987
BY: Al Morton

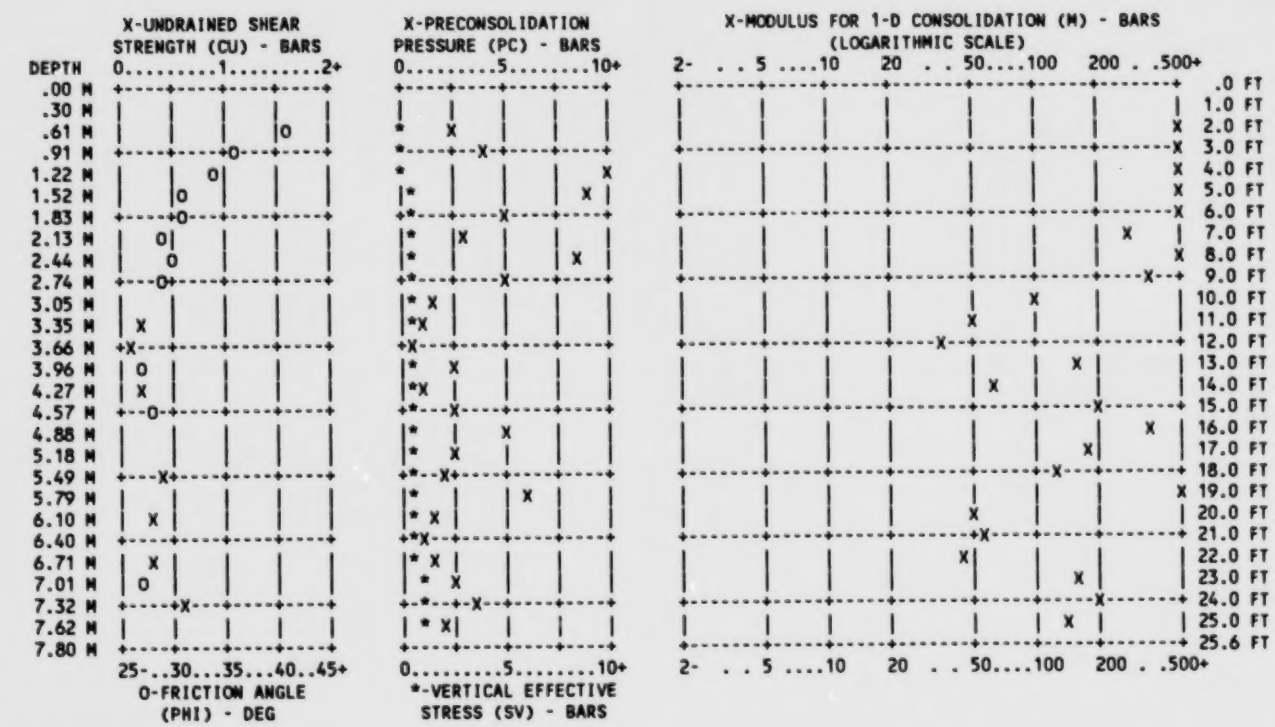
CALIBRATION INFORMATION:
DELTA A = .12 BARS DELTA B = .30 BARS GAGE 0 = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		2.00	10.60	298.	5.02	14.50	.000	1.900	.118	2.33	19.75	1.65		40.6	849.9	SAND
.91		2.50	9.50	240.	3.02	13.17	.000	1.900	.174	3.94	22.66	1.79		35.5	661.9	SILTY SAND
1.22		4.50	13.70	320.	2.20	18.04	.000	1.900	.232	10.53	45.46	2.43		34.0	978.5	SILTY SAND
1.52		4.10	10.10	203.	1.49	13.77	.000	1.800	.286	9.12	31.86	2.01		30.8	569.8	SANDY SILT
1.83		3.30	9.10	196.	1.79	9.24	.000	1.800	.341	5.03	14.74	1.47		30.8	475.4	SANDY SILT
2.13		2.50	6.60	134.	1.59	6.21	.000	1.700	.392	3.12	7.95	1.15		29.0	273.8	SANDY SILT
2.44		4.70	11.20	222.	1.41	10.13	.000	1.800	.446	8.27	18.56	1.61		29.7	556.6	SANDY SILT
2.74		3.50	8.60	171.	1.46	7.15	.029	1.800	.469	4.77	10.16	1.27		28.9	370.9	SANDY SILT
3.05		1.90	4.10	65.	1.00	3.80	.060	1.700	.492	1.34	2.72	.95			99.5	SILT
3.35		1.50	3.00	39.	.77	2.89	.089	1.600	.511	.91	1.77	.76	.178		48.8	CLAYEY SILT
3.66		1.30	2.70	36.	.82	2.36	.120	1.600	.529	.69	1.30	.64	.144		37.2	CLAYEY SILT
3.96		2.30	5.50	101.	1.37	3.89	.149	1.700	.549	2.29	4.17	.91		27.3	159.9	SANDY SILT
4.27		1.90	3.60	47.	.76	3.12	.180	1.700	.570	1.14	2.00	.81	.218		61.4	CLAYEY SILT
4.57		2.60	6.40	123.	1.52	3.97	.209	1.700	.591	2.48	4.21	.91		27.8	197.9	SANDY SILT
4.86		4.90	9.50	152.	.96	7.45	.239	1.800	.613	4.78	7.79	1.52			335.9	SILT
5.18		3.20	6.50	105.	1.04	4.58	.269	1.700	.635	2.31	3.64	1.09			180.6	SILT
5.49		3.00	5.50	76.	.80	4.14	.299	1.700	.657	2.04	3.11	1.01	.358		121.8	CLAYEY SILT
5.79		6.00	12.30	214.	1.12	8.07	.329	1.950	.681	6.00	8.82	1.61			490.1	SILT
6.10		2.50	4.00	39.	.51	3.13	.359	1.700	.706	1.42	2.01	.81	.271		51.5	SILTY CLAY
6.40		2.00	4.00	58.	1.00	2.27	.389	1.700	.727	.89	1.22	.62			58.8	SILT
6.71		2.50	3.90	36.	.48	2.88	.419	1.700	.748	1.32	1.76	.76	.259		43.7	SILTY CLAY
7.01		3.00	6.40	109.	1.24	3.28	.448	1.700	.769	2.63	3.42	.86		26.6	152.5	SANDY SILT
7.32		4.60	8.10	112.	.79	5.16	.479	1.800	.791	3.48	4.39	1.19	.570		205.5	CLAYEY SILT
7.62		3.30	6.50	101.	1.05	3.41	.508	1.700	.814	1.87	2.30	.87			144.7	SILT

END OF SOUNDING

TEST NO. Sounding 13 (CONTINUED) PAGE 1


X-UNDRAINED SHEAR STRENGTH (CU) - BARS
0.....1.....2+
X-PRECONSOLIDATION PRESSURE (PC) - BARS
0.....5.....10+
X-MODULUS FOR 1-D CONSOLIDATION (M) - BARS (LOGARITHMIC SCALE)
2- . . 5 ....10 20 . . 50....100 200 . .500+
DEPTH
.00 M .30 M .61 M .91 M 1.22 M 1.52 M 1.83 M 2.13 M 2.44 M 2.74 M 3.05 M 3.35 M 3.66 M 3.96 M 4.27 M 4.57 M 4.88 M 5.18 M 5.49 M 5.79 M 6.10 M 6.40 M 6.71 M 7.01 M 7.32 M 7.62 M 7.80 M
.0 FT 1.0 FT 2.0 FT 3.0 FT 4.0 FT 5.0 FT 6.0 FT 7.0 FT 8.0 FT 9.0 FT 10.0 FT 11.0 FT 12.0 FT 13.0 FT 14.0 FT 15.0 FT 16.0 FT 17.0 FT 18.0 FT 19.0 FT 20.0 FT 21.0 FT 22.0 FT 23.0 FT 24.0 FT 25.0 FT 25.6 FT
25-..30...35...40..45+
O-FRICTION ANGLE (PHI) - DEG
0.....5.....10+
*-VERTICAL EFFECTIVE STRESS (SV) - BARS
2- . . 5 ....10 20 . . 50....100 200 . .500+

END OF SOUNDING

TEST NO. Sounding 13 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew14.dil

TEST NO. Sounding 14

RECORD OF DILATOMETER TEST NO. Sounding 14
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

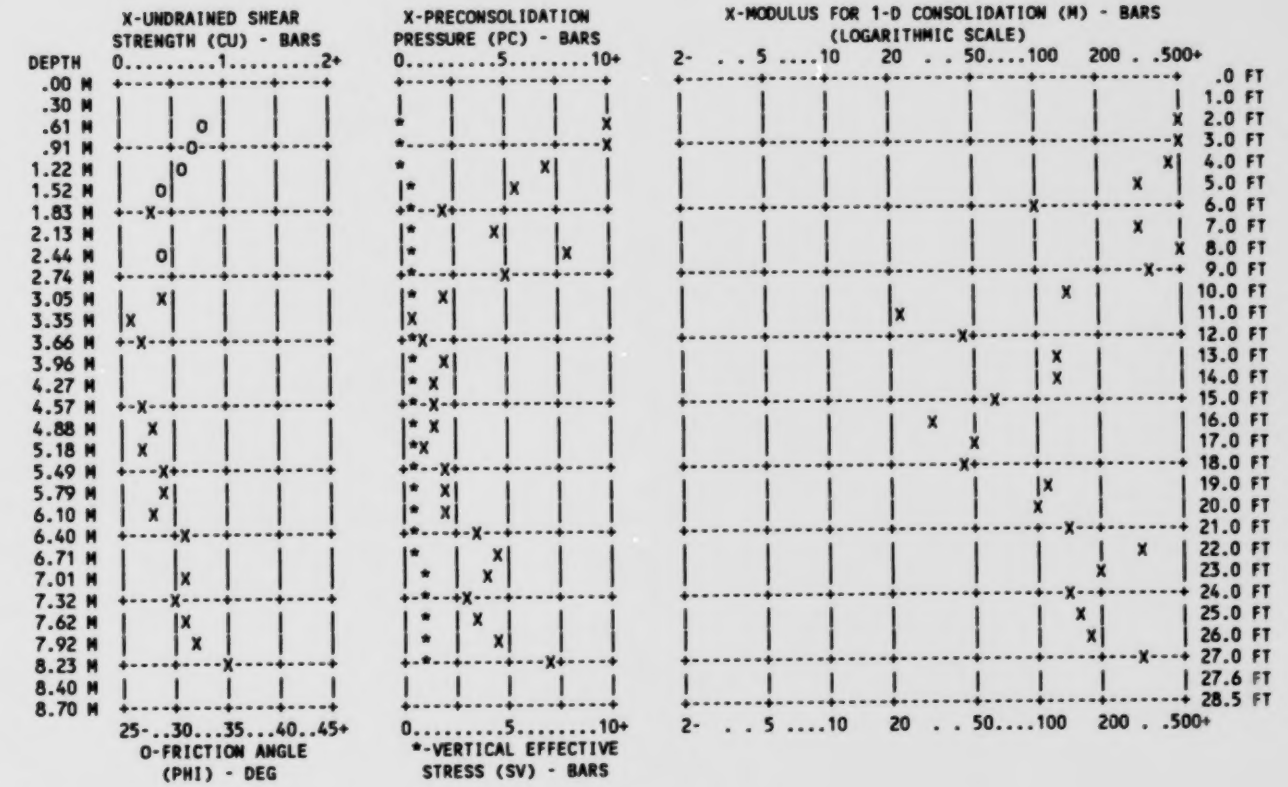
LOCATION: PC-10 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 26+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .18 BARS DELTA B = .38 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		4.50	11.20	224.	1.47	37.06	.000	1.800	.118	25.96	*****	4.75		32.8	836.7	SANDY SILT
.91		3.40	9.10	187.	1.62	19.43	.000	1.800	.171	10.11	59.11	2.66		32.1	586.0	SANDY SILT
1.22		3.10	8.10	162.	1.52	13.55	.000	1.800	.226	6.92	30.65	1.98		30.9	450.9	SANDY SILT
1.52		2.90	6.80	122.	1.20	10.45	.000	1.800	.279	5.73	20.55	1.66		28.9	309.3	SANDY SILT
1.83		2.00	3.90	49.	.67	6.36	.000	1.700	.332	2.02	6.09	1.37	.310		99.5	CLAYEY SILT
2.13		3.80	8.00	133.	1.01	9.90	.000	1.800	.384	4.65	12.13	1.83			330.3	SILT
2.44		4.50	10.80	209.	1.37	10.02	.000	1.800	.438	8.05	18.38	1.60		29.5	523.3	SANDY SILT
2.74		4.20	8.70	144.	1.00	8.99	.029	1.800	.462	4.82	10.44	1.72			343.7	SILT
3.05		2.50	5.20	78.	.89	5.19	.060	1.700	.485	2.14	4.42	1.19	.351		143.4	CLAYEY SILT
3.35		1.10	2.30	23.	.58	2.30	.089	1.600	.504	.63	1.24	.62	.132		23.2	SILTY CLAY
3.66		1.60	3.10	34.	.61	3.09	.120	1.600	.522	1.03	1.97	.80	.198		44.4	CLAYEY SILT
3.96		2.50	5.20	78.	.93	4.48	.149	1.700	.541	1.90	3.52	1.07			132.1	SILT
4.27		2.40	5.20	82.	1.03	4.07	.180	1.700	.562	1.70	3.03	1.00			130.9	SILT
4.57		2.00	3.90	49.	.74	3.27	.209	1.700	.583	1.25	2.15	.84	.237		66.5	CLAYEY SILT
4.88		2.40	3.50	20.	.25	3.84	.239	1.600	.603	1.67	2.76	.96	.300		29.9	CLAY
5.18		2.00	3.70	42.	.65	2.99	.269	1.600	.621	1.16	1.87	.78	.225		52.6	CLAYEY SILT
5.49		3.00	4.30	27.	.27	4.44	.299	1.700	.640	2.22	3.47	1.07	.382		45.0	CLAY
5.79		3.00	5.50	71.	.74	4.17	.329	1.700	.661	2.08	3.14	1.02	.364		113.9	CLAYEY SILT
6.10		2.80	5.20	67.	.76	3.71	.359	1.700	.682	1.79	2.62	.93	.325		100.1	CLAYEY SILT
6.40		4.20	6.80	74.	.55	5.52	.389	1.800	.704	3.43	4.88	1.25	.552		140.6	SILTY CLAY
6.71		5.10	10.10	162.	1.00	6.37	.419	1.800	.729	4.44	6.09	1.37			331.5	SILT
7.01		4.90	8.20	100.	.64	5.98	.448	1.800	.752	4.15	5.51	1.31	.650		197.0	CLAYEY SILT
7.32		4.20	7.00	82.	.62	4.88	.479	1.800	.776	3.12	4.02	1.14	.521		144.1	CLAYEY SILT
7.62		4.50	7.40	85.	.61	5.07	.508	1.800	.800	3.41	4.27	1.17	.563		153.8	CLAYEY SILT
7.92		5.50	8.60	93.	.53	6.09	.538	1.800	.824	4.68	5.68	1.33	.729		184.3	SILTY CLAY
8.23		7.00	11.40	140.	.63	7.57	.568	1.800	.848	6.76	7.98	1.54	.985		309.9	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 14 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew15.dil

TEST NO. Sounding 15

RECORD OF DILATOMETER TEST NO. Sounding 15
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

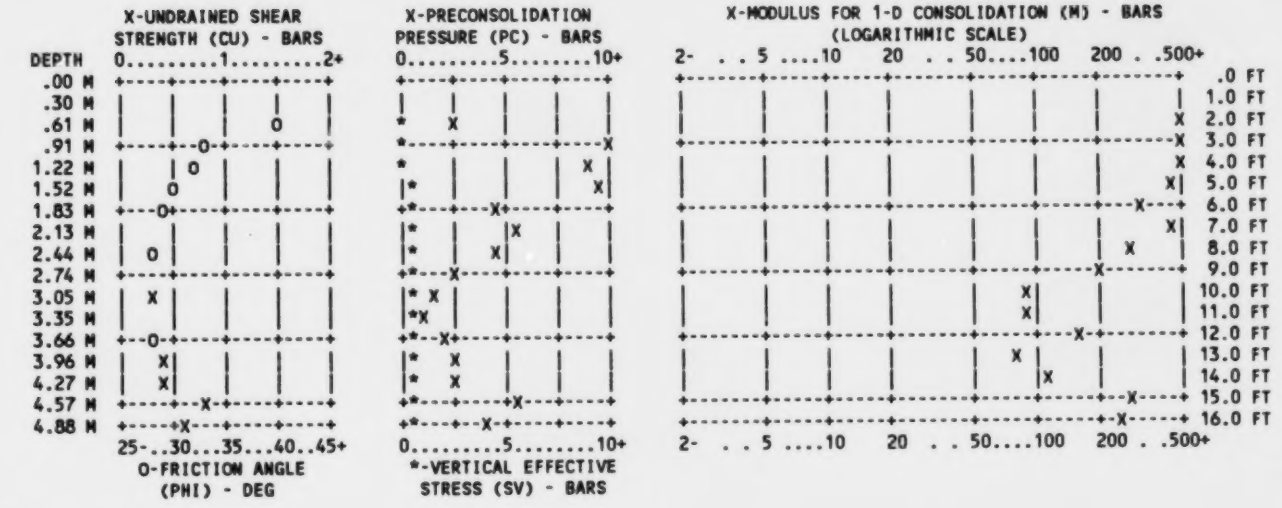
LOCATION: PC-11 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 28+50)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .18 BARS DELTA B = .42 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		1.90	10.20	281.	4.77	14.36	.000	1.900	.118	2.40	20.38	1.68		40.0	797.6	SAND
.91		4.00	10.80	226.	1.68	22.44	.000	1.800	.172	13.25	76.84	3.00		32.7	737.6	SANDY SILT
1.22		3.70	9.90	204.	1.63	15.84	.000	1.800	.227	9.10	40.04	2.24		31.7	599.0	SANDY SILT
1.52		3.90	9.00	164.	1.23	13.76	.000	1.800	.280	9.51	33.96	2.04		29.7	459.4	SANDY SILT
1.83		2.90	7.40	142.	1.42	8.61	.000	1.800	.335	4.68	13.98	1.43		29.3	334.6	SANDY SILT
2.13		4.40	9.90	179.	1.19	11.17	.000	1.800	.388	5.68	14.64	1.97			465.1	SILT
2.44		3.00	7.20	131.	1.26	6.78	.000	1.800	.443	4.26	9.62	1.24		28.1	277.8	SANDY SILT
2.74		2.80	6.30	106.	1.09	6.04	.029	1.700	.465	2.60	5.60	1.32			211.2	SILT
3.05		2.00	4.10	55.	.77	4.21	.060	1.700	.486	1.55	3.19	1.02	.271		88.7	CLAYEY SILT
3.35		1.70	4.00	62.	1.05	3.37	.089	1.700	.507	1.14	2.25	.86			87.7	SILT
3.66		2.00	5.50	106.	1.59	3.63	.120	1.700	.528	1.96	3.72	.87		27.8	161.2	SANDY SILT
3.96		2.90	4.70	44.	.44	5.23	.149	1.700	.549	2.46	4.48	1.20	.402		80.3	SILTY CLAY
4.27		3.00	5.30	62.	.61	5.12	.180	1.700	.570	2.47	4.33	1.18	.406		112.3	CLAYEY SILT
4.57		5.10	9.10	124.	.73	8.28	.209	1.800	.592	5.43	9.17	1.63	.769		285.9	CLAYEY SILT
4.88		4.40	8.20	117.	.80	6.78	.239	1.800	.616	4.14	6.72	1.43	.624		245.7	CLAYEY SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 15 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew16.dil

TEST NO. Sounding 16

RECORD OF DILATOMETER TEST NO. Sounding 16
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

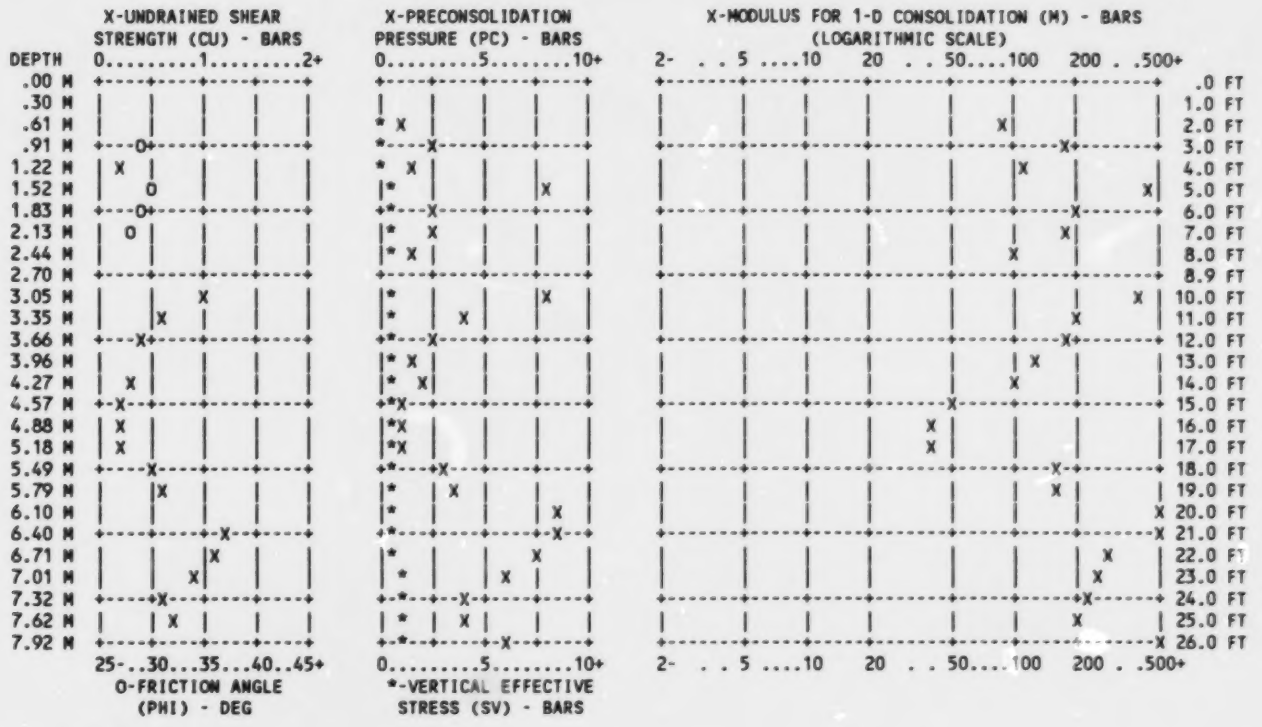
LOCATION: PC-12 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 31+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .19 BARS DELTA B = .55 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		.80	2.60	39.	1.19	7.94	.000	1.600	.118	1.01	8.59	1.59			87.8	SILT
.91		1.40	4.10	71.	1.38	8.96	.000	1.700	.167	2.51	15.07	1.48		29.2	170.9	SANDY SILT
1.22		1.50	3.60	50.	.88	7.48	.000	1.600	.217	1.70	7.83	1.53	.248		109.4	CLAYEY SILT
1.52		3.50	8.60	159.	1.32	13.01	.000	1.800	.267	7.97	29.87	1.94		29.9	436.7	SANDY SILT
1.83		2.00	5.50	101.	1.41	6.41	.000	1.700	.320	2.75	8.59	1.19		28.5	208.0	SANDY SILT
2.13		2.00	5.20	90.	1.25	5.58	.000	1.700	.370	2.62	7.09	1.11		27.7	172.8	SANDY SILT
2.44		1.70	4.10	60.	.96	4.28	.000	1.700	.422	1.38	3.28	1.04			99.9	SILT
3.05		5.90	10.50	141.	.69	12.51	.060	1.800	.467	8.15	17.46	2.11	1.015		381.4	CLAYEY SILT
3.35		3.80	7.10	93.	.71	7.70	.089	1.800	.490	4.01	8.18	1.56	.581		208.3	CLAYEY SILT
3.66		3.00	6.20	90.	.88	5.74	.120	1.700	.513	2.66	5.19	1.28	.422		174.0	CLAYEY SILT
3.96		2.20	5.10	79.	1.06	4.00	.149	1.700	.534	1.57	2.94	.98			124.9	SILT
4.27		2.40	4.90	64.	.80	4.18	.180	1.700	.555	1.76	3.16	1.02	.307		103.8	CLAYEY SILT
4.57		1.80	3.60	39.	.64	3.01	.209	1.600	.574	1.09	1.89	.79	.211		49.2	CLAYEY SILT
4.88		2.00	3.60	31.	.47	3.22	.239	1.600	.592	1.25	2.10	.83	.236		41.9	SILTY CLAY
5.18		2.00	3.60	31.	.48	3.08	.269	1.600	.610	1.20	1.96	.80	.230		40.5	SILTY CLAY
5.49		3.50	6.50	82.	.72	5.20	.299	1.700	.630	2.80	4.45	1.19	.458		151.2	CLAYEY SILT
5.79		4.10	7.10	82.	.62	5.90	.329	1.800	.652	3.53	5.41	1.30	.555		161.4	CLAYEY SILT
6.10		7.30	14.30	228.	.96	10.05	.359	1.950	.679	8.42	12.41	1.84			571.2	SILT
6.40		7.50	14.00	210.	.86	9.93	.389	1.950	.706	8.60	12.17	1.83	1.152		523.1	CLAYEY SILT
6.71		7.00	11.00	119.	.52	9.01	.419	1.800	.733	7.68	10.47	1.72	1.059		284.3	SILTY CLAY
7.01		6.10	10.00	115.	.58	7.51	.448	1.800	.757	5.96	7.88	1.53	.870		254.1	SILTY CLAY
7.32		4.80	8.60	111.	.74	5.58	.479	1.800	.781	3.87	4.96	1.25	.620		212.6	CLAYEY SILT
7.62		5.10	8.80	108.	.67	5.76	.508	1.800	.805	4.19	5.21	1.28	.664		208.9	CLAYEY SILT
7.92		6.50	13.30	221.	1.09	7.04	.538	1.950	.830	5.92	7.13	1.47			475.2	SILT

END OF SOUNDING


X-UNDRAINED SHEAR STRENGTH (CU) - BARS
X-PRECONSOLIDATION PRESSURE (PC) - BARS
X-MODULUS FOR 1-D CONSOLIDATION (M) - BARS (LOGARITHMIC SCALE)
DEPTH
0.....1.....2+
0.....5.....10+
2- . . 5 ....10 20 . . 50....100 200 . .500+
.00 M .0 FT
.30 M 1.0 FT
.61 M 2.0 FT
.91 M 3.0 FT
1.22 M 4.0 FT
1.52 M 5.0 FT
1.83 M 6.0 FT
2.13 M 7.0 FT
2.44 M 8.0 FT
2.70 M 8.9 FT
3.05 M 10.0 FT
3.35 M 11.0 FT
3.66 M 12.0 FT
3.96 M 13.0 FT
4.27 M 14.0 FT
4.57 M 15.0 FT
4.88 M 16.0 FT
5.18 M 17.0 FT
5.49 M 18.0 FT
5.79 M 19.0 FT
6.10 M 20.0 FT
6.40 M 21.0 FT
6.71 M 22.0 FT
7.01 M 23.0 FT
7.32 M 24.0 FT
7.62 M 25.0 FT
7.92 M 26.0 FT
25-..30...35...40..45+
O-FRICTION ANGLE (PHI) - DEG
0.....5.....10+
*-VERTICAL EFFECTIVE STRESS (SV) - BARS

END OF SOUNDING

TEST NO. Sounding 16 (FINISHED) PAGE 2

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew17.dil

TEST NO. Sounding 17

RECORD OF DILATOMETER TEST NO. Sounding 17
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

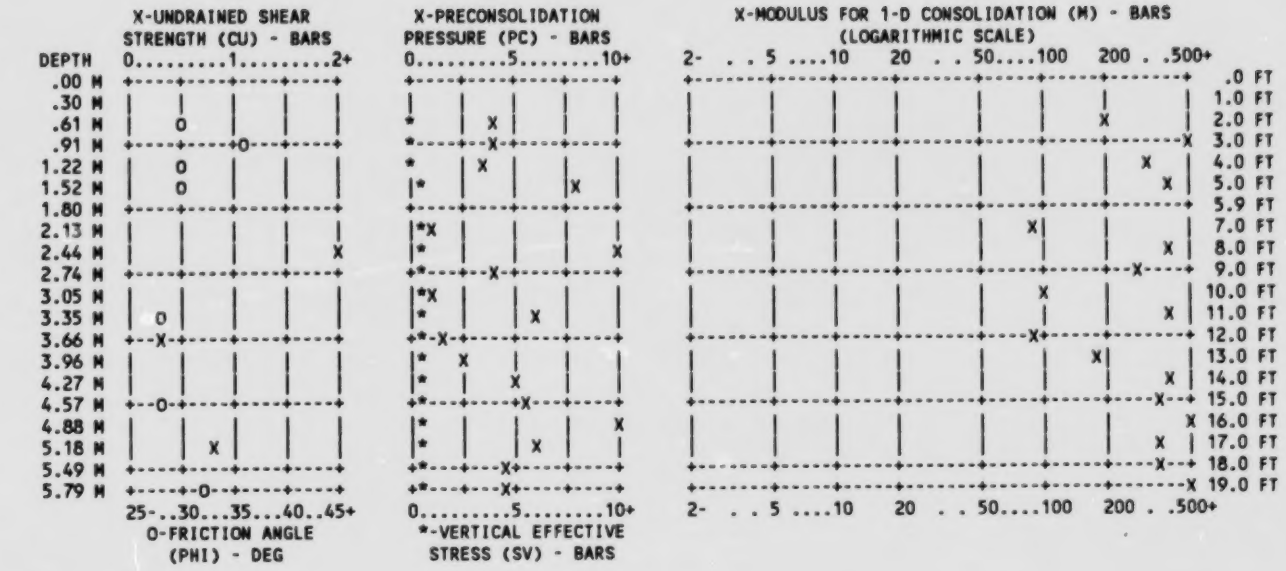
LOCATION: PC-13 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 33+50)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .17 BARS DELTA B = .28 BARS GAGE 0 = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		1.60	4.00	71.	1.22	14.17	.000	1.700	.118	4.24	35.94	2.09		29.8	201.1	SANDY SILT
.91		2.50	9.60	242.	2.99	13.67	.000	1.900	.171	4.15	24.30	1.85		35.6	677.4	SILTY SAND
1.22		2.20	6.10	126.	1.65	9.73	.000	1.700	.226	3.73	16.53	1.54		30.4	311.0	SANDY SILT
1.52		3.50	8.10	151.	1.26	12.49	.000	1.800	.277	7.79	28.09	1.89		29.6	409.8	SANDY SILT
2.13		1.50	3.50	56.	1.02	4.17	.000	1.700	.382	1.20	3.14	1.02			91.9	SILT
2.44		12.50	16.00	111.	.26	28.66	.000	1.900	.437	27.79	63.63	3.40	2.679		388.6	CLAY
2.74		3.70	7.70	129.	1.02	7.93	.029	1.800	.462	3.96	8.58	1.59			293.5	SILT
3.05		1.70	4.10	71.	1.20	3.53	.060	1.700	.485	1.18	2.43	.90			104.7	SILT
3.35		4.00	9.10	169.	1.27	7.59	.089	1.800	.507	5.88	11.60	1.33		28.4	377.8	SANDY SILT
3.66		2.20	4.10	53.	.70	4.11	.120	1.700	.530	1.63	3.08	1.01	.287		84.3	CLAYEY SILT
3.96		2.90	6.00	97.	1.00	5.07	.149	1.700	.550	2.35	4.27	1.17			175.8	SILT
4.27		4.90	10.00	169.	1.05	8.13	.180	1.800	.573	5.11	8.91	1.61			388.6	SILT
4.57		4.20	9.40	173.	1.27	6.58	.209	1.800	.597	5.46	9.15	1.22		28.1	361.5	SANDY SILT
4.88		8.00	16.00	275.	1.05	12.12	.239	1.950	.623	10.36	16.62	2.07			737.8	SILT
5.18		5.70	10.30	151.	.81	8.31	.269	1.800	.649	5.99	9.23	1.64	.847		349.7	CLAYEY SILT
5.49		4.90	10.00	169.	1.08	6.74	.299	1.800	.673	4.48	6.66	1.43			357.1	SILT
5.79		4.90	16.00	388.	2.66	6.01	.329	2.000	.700	4.61	6.59	1.05		32.0	794.3	SILTY SAND

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 17 (FINISHED) PAGE 2

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew18.dil

TEST NO. Sounding 18

RECORD OF DILATOMETER TEST NO. Sounding 18
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

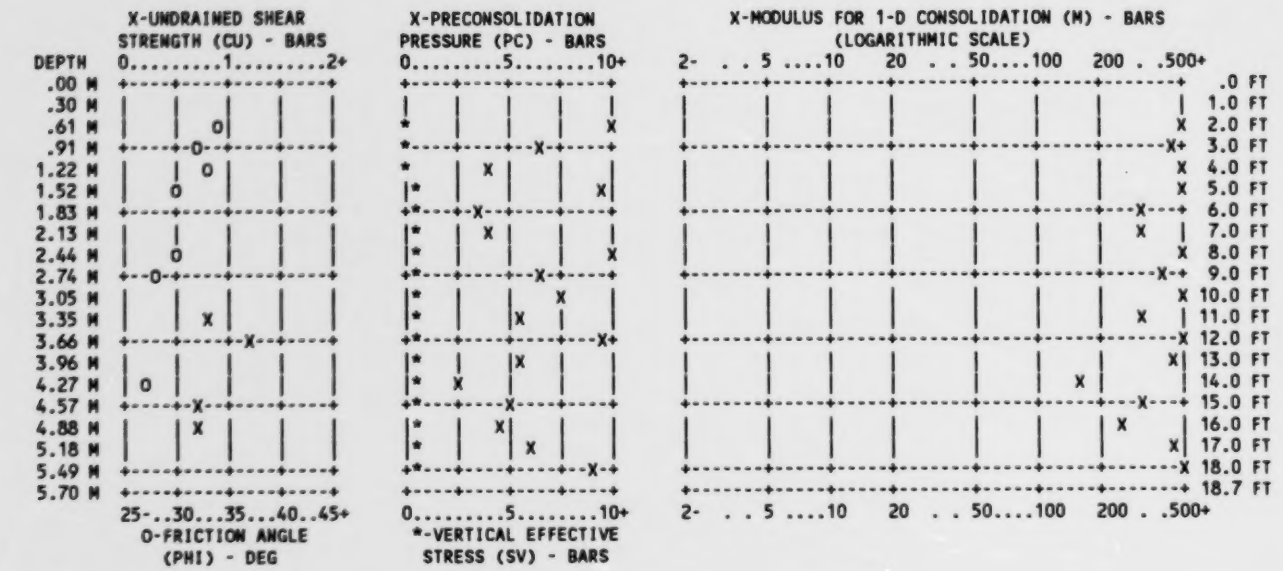
LOCATION: PC-14 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 36+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .19 BARS DELTA B = .29 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		6.00	16.00	347.	1.75	48.42	.000	1.950	.118	40.50	*****	6.07		34.3	1385.2	SANDY SILT
.91		2.70	7.60	161.	1.74	15.41	.000	1.800	.173	6.43	37.15	2.18		32.0	468.5	SANDY SILT
1.22		2.50	8.20	190.	2.26	10.58	.000	1.900	.229	3.96	17.27	1.57		32.7	485.7	SILTY SAND
1.52		3.90	9.10	172.	1.29	13.57	.000	1.800	.284	9.25	32.58	2.01		29.9	479.7	SANDY SILT
1.83		3.10	7.00	125.	1.15	9.21	.000	1.800	.339	3.67	10.83	1.75			301.4	SILT
2.13		3.40	7.40	128.	1.08	8.72	.000	1.800	.392	3.89	9.94	1.69			303.1	SILT
2.44		7.30	16.00	299.	1.22	15.78	.000	1.950	.449	19.81	44.14	2.27		30.0	878.0	SANDY SILT
2.74		4.00	9.00	165.	1.21	8.29	.029	1.800	.475	6.47	13.64	1.42		28.4	381.3	SANDY SILT
3.05		5.90	12.10	208.	1.05	11.46	.060	1.950	.501	7.64	15.24	2.00			548.0	SILT
3.35		4.80	9.10	139.	.85	8.94	.089	1.800	.527	5.45	10.34	1.71	.753		332.2	CLAYEY SILT
3.66		7.10	13.20	205.	.86	12.45	.120	1.950	.554	9.59	17.33	2.10	1.197		554.3	CLAYEY SILT
3.96		5.00	10.60	187.	1.12	8.26	.149	1.800	.579	5.29	9.14	1.63			431.0	SILT
4.27		2.40	5.60	99.	1.26	3.78	.180	1.700	.602	2.45	4.07	.91		27.0	153.0	SANDY SILT
4.57		5.00	9.40	143.	.86	7.67	.209	1.800	.624	5.08	8.13	1.55	.736		318.8	CLAYEY SILT
4.88		4.70	8.40	117.	.75	6.92	.239	1.800	.648	4.50	6.94	1.45	.674		249.5	CLAYEY SILT
5.18		5.90	11.50	187.	.97	8.28	.269	1.800	.672	6.17	9.17	1.63			431.1	SILT
5.49		7.80	16.00	281.	1.11	10.46	.299	1.950	.699	9.22	13.20	1.89			715.0	SILT

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 18 (FINISHED) PAGE 2

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew19.dil

TEST NO. Sounding 19

RECORD OF DILATOMETER TEST NO. Sounding 19
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

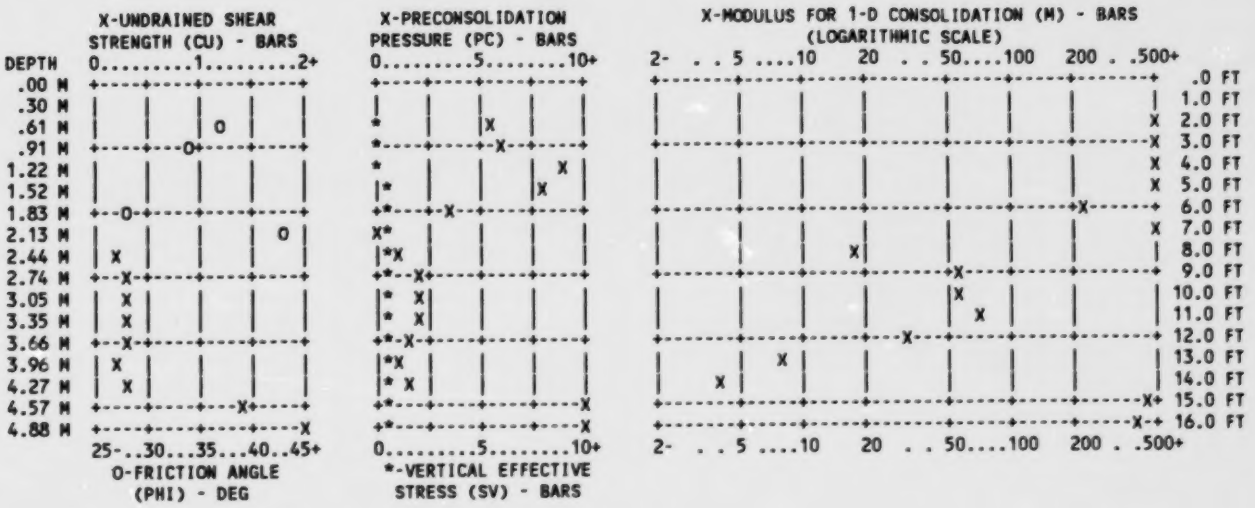
LOCATION: PC-15 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 38+50)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .20 BARS DELTA B = .23 BARS GAGE O = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.61		2.50	9.80	250.	3.06	19.97	.000	1.900	.118	5.63	47.71	2.55		36.7	789.7	SILTY SAND
.91		2.80	9.30	221.	2.36	15.50	.000	1.900	.174	5.82	33.45	2.12		34.1	644.7	SILTY SAND
1.22		4.80	9.80	167.	1.01	20.73	.000	1.800	.230	8.84	38.38	2.84			531.2	SILT
1.52		4.80	9.70	163.	.98	16.87	.000	1.800	.283	7.88	27.83	2.52			487.8	SILT
1.83		2.40	5.70	105.	1.23	7.30	.000	1.700	.336	3.68	10.94	1.30		28.2	229.1	SANDY SILT
2.13		2.10	16.00	491.	8.70	4.18	.000	1.900	.389	.08	.20	.13		42.7	854.8	SAND
2.44		1.20	2.00	13.	.28	3.12	.000	1.600	.443	.89	2.00	.81	.170		17.6	CLAY
2.74		2.10	3.40	32.	.41	4.84	.029	1.600	.460	1.83	3.97	1.13	.306		55.7	SILTY CLAY
3.05		2.20	3.50	32.	.40	4.80	.060	1.600	.479	1.87	3.92	1.13	.314		55.4	SILTY CLAY
3.35		2.20	3.80	43.	.55	4.52	.089	1.700	.498	1.78	3.57	1.08	.304		71.9	SILTY CLAY
3.66		2.00	3.00	21.	.29	3.96	.120	1.600	.518	1.50	2.91	.98	.268		32.2	CLAY
3.96		1.60	2.20	6.	.11	3.08	.149	1.500	.534	1.05	1.96	.80	.201		8.0	MUD
4.27		2.10	2.60	3.	.03	3.86	.180	1.500	.549	1.53	2.79	.96	.274		3.9	MUD
4.57		7.90	12.90	167.	.63	13.44	.209	1.950	.570	11.13	19.52	2.20	1.357		462.8	CLAYEY SILT
4.88		12.20	16.00	123.	.30	20.04	.239	1.900	.598	21.79	36.42	2.78	2.347		387.8	CLAY

END OF SOUNDING



END OF SOUNDING

TEST NO. Sounding 19 (FINISHED)

Ontario Hydro - Civil Research
FILE NAME: DeCew Falls GS - Geotechnical Investigations
FILE NUMBER: decew20.dil

TEST NO. Sounding 20

RECORD OF DILATOMETER TEST NO. Sounding 20
USING DATA REDUCTION PROCEDURES IN MARCHETTI (ASCE,J-GED,MARCH 80)
KO IN SANDS DETERMINED USING SCHMERTMANN METHOD (1983)
MODIFIED MAYNE AND KULHAWY FORMULA USED FOR OCR IN SANDS (ASCE,J-GED,JUNE 82)

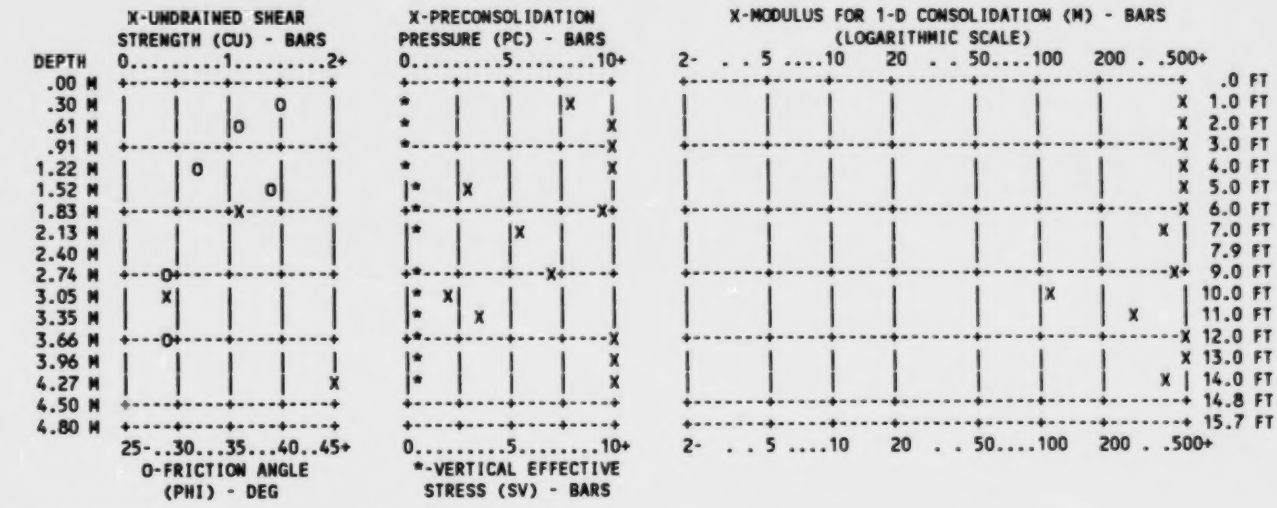
LOCATION: PC-16 ,Pushed Blade ,Vertical - Blade # 24 (Map Chainage: 41+00)
PERFORMED - DATE: August 1987
BY: Al Morton

CALIBRATION INFORMATION:
DELTA A = .19 BARS DELTA B = .30 BARS GAGE 0 = .00 BARS GWT DEPTH= 2.44 M

1 BAR = 1.019 KG/CM2 = 1.044 TSF = 14.51 PSI ANALYSIS USES H2O UNIT WEIGHT = 1.000 T/M3

Z (M)	THRUST (KG)	A (BAR)	B (BAR)	ED (BAR)	ID	KD	UO (BAR)	GAMMA (T/M3)	SV (BAR)	PC (BAR)	OCR	KO	CU (BAR)	PHI (DEG)	M (BAR)	SOIL TYPE
.30		2.40	11.00	295.	3.90	37.03	.000	1.900	.059	7.84	*****	4.41		40.0	1104.9	SAND
.61		5.00	16.00	383.	2.37	39.42	.000	2.000	.118	23.06	*****	4.92		36.0	1454.6	SILTY SAND
.91		6.80	14.60	266.	1.16	37.54	.000	1.950	.176	17.11	96.96	3.94			999.4	SILT
1.22		6.50	16.00	328.	1.52	26.46	.000	1.950	.236	26.16	*****	3.49		32.4	1123.1	SANDY SILT
1.52		3.20	16.00	449.	4.66	9.49	.000	1.900	.292	2.98	10.21	1.20		38.5	1100.8	SAND
1.83		5.80	11.10	175.	.88	16.49	.000	1.800	.349	9.37	26.86	2.49	1.072		521.1	CLAYEY SILT
2.13		4.40	9.20	157.	1.03	10.89	.000	1.800	.402	5.65	14.06	1.94			405.2	SILT
2.44		10.00	4.50	-208.	-.59		.000	P01 =	10.49	P0 =	10.19	P1 =	4.20			QUESTIONABLE
2.74		4.30	10.00	190.	1.30	8.75	.029	1.800	.480	7.05	14.68	1.46		28.9	449.7	SANDY SILT
3.05		2.50	4.70	62.	.71	5.06	.060	1.700	.503	2.14	4.26	1.17	.353		112.6	CLAYEY SILT
3.35		3.50	7.60	132.	1.11	6.52	.089	1.800	.525	3.31	6.31	1.39			272.9	SILT
3.66		5.70	12.70	237.	1.26	9.87	.120	1.950	.552	10.11	18.34	1.59		29.0	590.0	SANDY SILT
3.96		8.20	16.00	266.	.97	13.59	.149	1.950	.580	11.51	19.87	2.22			743.2	SILT
4.27		12.20	16.00	121.	.29	19.82	.180	1.900	.608	21.76	35.80	2.76	2.351		379.6	CLAY

END OF SOUNDING


X-UNDRAINED SHEAR STRENGTH (CU) - BARS
0.....1.....2+
X-PRECONSOLIDATION PRESSURE (PC) - BARS
0.....5.....10+
X-MODULUS FOR 1-D CONSOLIDATION (M) - BARS (LOGARITHMIC SCALE)
2- . . 5 ....10 20 . . 50....100 200 . .500+
DEPTH
.00 M .0 FT
.30 M 1.0 FT
.61 M 2.0 FT
.91 M 3.0 FT
1.22 M 4.0 FT
1.52 M 5.0 FT
1.83 M 6.0 FT
2.13 M 7.0 FT
2.40 M 7.9 FT
2.74 M 9.0 FT
3.05 M 10.0 FT
3.35 M 11.0 FT
3.66 M 12.0 FT
3.96 M 13.0 FT
4.27 M 14.0 FT
4.50 M 14.8 FT
4.80 M 15.7 FT
25-..30...35...40..45+
O-FRICTION ANGLE (PHI) - DEG
0.....5.....10+
*-VERTICAL EFFECTIVE STRESS (SV) - BARS
2- . . 5 ....10 20 . . 50....100 200 . .500+

END OF SOUNDING

TEST NO. Sounding 20 (FINISHED) PAGE 2

APPENDIX B

Ontario Hydro

Engineer :MIKE GRILLS
On Site Loc:DECEW RKFL BERM1
Job No. : 3ft S PIEZ#2
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :29/07/87 10:30A
Cone Used : 1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.30	0.98	3.03	108.96	3.59	2.94	clayey silt to silty clay	UNDFND	UNDFD	15	201.9
0.75	2.46	1.33	67.08	5.04	10.29	clay	UNDFND	UNDFD	13	88.0
1.35	4.43	0.87	69.98	8.02	20.57	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.75	5.74	0.64	61.58	9.65	30.37	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.10	6.89	0.79	68.96	8.74	37.72	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.35	7.71	0.95	88.08	9.23	43.59	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.60	8.53	1.21	93.66	7.73	48.49	clay	UNDFND	UNDFD	12	77.5
3.00	9.84	1.45	110.46	7.61	54.86	clay	UNDFND	UNDFD	15	93.0
3.35	10.99	1.34	96.96	7.22	62.21	clay	UNDFND	UNDFD	13	85.4
3.65	11.98	1.75	124.70	7.11	68.57	clay	UNDFND	UNDFD	18	112.4
3.95	12.96	1.45	86.32	5.93	74.45	clay	UNDFND	UNDFD	15	92.0
4.30	14.11	1.43	120.86	8.47	80.82	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.55	14.93	1.54	151.28	9.83	86.70	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.90	16.08	2.12	165.34	7.81	92.57	clay	UNDFND	UNDFD	21	135.0

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :MIKE GRILLS
On Site Loc:DECEW RKFL BERMC
Job No. : 13ft N PIEZ#2
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :29/07/87 11:30
Cone Used :ONE 1 2
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.50	1.64	1.71	7.64	0.45	4.90	sandy silt to clayey silt	UNDFND	UNDFD	7	113.4
0.75	2.46	1.26	20.64	1.64	12.25	clayey silt to silty clay	UNDFND	UNDFD	6	83.1
1.30	4.27	0.90	21.18	2.36	20.08	clayey silt to silty clay	UNDFND	UNDFD	4	58.4
1.55	5.09	1.36	56.92	4.19	27.92	clay	UNDFND	UNDFD	14	88.7
1.80	5.91	1.15	53.16	4.62	32.82	clay	UNDFND	UNDFD	12	74.5
2.05	6.73	1.12	61.64	5.51	37.72	clay	UNDFND	UNDFD	11	72.0
2.30	7.55	1.03	66.88	6.46	42.61	clay	UNDFND	UNDFD	10	66.1
2.55	8.37	1.65	86.56	5.25	47.51	clay	UNDFND	UNDFD	16	106.7
2.85	9.35	1.17	64.30	5.51	52.90	clay	UNDFND	UNDFD	12	74.2
3.30	10.83	1.26	75.20	5.96	60.25	clay	UNDFND	UNDFD	13	80.0
3.55	11.65	2.10	121.30	5.77	67.10	clay	UNDFND	UNDFD	21	135.7

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE
Job No. :3 (35+00)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :29/07/87 11:30
Cone Used :CONE 1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.40	1.31	6.92	158.86	2.30	3.92	silty sand to sandy silt	>90	>48	23	UNDEFINED
0.65	2.13	6.28	259.18	4.13	10.29	clayey silt to silty clay	UNDFND	UNDFD	31	418.1
0.95	3.12	5.92	238.98	4.04	15.67	clayey silt to silty clay	UNDFND	UNDFD	30	393.5
1.35	4.43	4.48	208.34	4.65	22.53	silty clay to clay	UNDFND	UNDFD	30	297.0
1.80	5.91	2.35	146.80	6.24	30.86	clay	UNDFND	UNDFD	24	154.7
2.25	7.38	2.64	150.16	5.69	39.67	clay	UNDFND	UNDFD	26	173.1
2.60	8.53	1.30	65.00	5.00	47.51	clay	UNDFND	UNDFD	13	83.5
2.95	9.68	1.17	61.38	5.25	54.37	clay	UNDFND	UNDFD	12	74.2
3.20	10.50	0.88	79.98	9.11	60.25	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.70	12.14	0.68	66.32	9.80	67.59	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.95	12.96	0.74	70.02	9.48	74.94	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.25	13.94	0.42	49.08	11.77	80.33	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.85	15.91	0.16	39.60	25.30	89.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.30	17.39	0.86	73.36	8.52	98.70	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.55	18.21	3.64	217.68	5.97	102.12	clay	UNDFND	UNDFD	36	235.8
5.80	19.03	4.02	216.36	5.38	104.57	clay	UNDFND	UNDFD	40	260.8
6.25	20.51	5.41	242.82	4.49	107.99	silty clay to clay	UNDFND	UNDFD	36	352.6

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE
Job No. :4
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :30/07/87 11:30
Cone Used :1 (32+50)
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.25	0.82	6.01	139.26	2.32	2.45	sandy silt to clayey silt	UNDFND	UNDFD	24	400.3
0.90	2.95	4.59	142.90	3.12	11.27	sandy silt to clayey silt	UNDFND	UNDFD	18	305.0
1.15	3.77	4.39	199.28	4.54	20.08	silty clay to clay	UNDFND	UNDFD	29	291.0
1.70	5.58	3.30	129.38	3.92	27.92	clayey silt to silty clay	UNDFND	UNDFD	16	218.0
2.00	6.56	2.22	113.70	5.11	36.25	clay	UNDFND	UNDFD	22	145.9
2.55	8.37	2.78	150.44	5.40	44.57	clay	UNDFND	UNDFD	28	182.6
2.95	9.68	3.16	205.16	6.49	53.88	clay	UNDFND	UNDFD	32	207.0
3.65	11.98	3.88	218.02	5.62	64.65	clay	UNDFND	UNDFD	39	254.2
4.10	13.45	3.06	197.64	6.47	75.92	clay	UNDFND	UNDFD	31	198.6
4.45	14.60	2.54	149.64	5.88	83.76	clay	UNDFND	UNDFD	25	163.9
4.75	15.58	1.08	86.94	8.06	90.12	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.15	16.90	0.23	43.70	19.14	96.98	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.40	17.72	1.90	67.96	3.58	100.65	silty clay to clay	UNDFND	UNDFD	13	119.5
5.65	18.54	0.90	97.30	10.85	103.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.00	19.69	1.22	113.88	9.37	106.04	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.35	20.83	2.67	225.98	8.46	109.46	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE
Job No. :5 (30+00)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :30/07/87 13:00
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.30	0.98	2.38	48.20	2.02	2.94	sandy silt to clayey silt	UNDFND	UNDFD	10	158.7
0.60	1.97	2.37	59.98	2.53	8.82	sandy silt to clayey silt	UNDFND	UNDFD	9	157.2
1.00	3.28	1.79	67.36	3.77	15.67	silty clay to clay	UNDFND	UNDFD	12	118.0
1.50	4.92	1.76	79.46	4.53	24.49	clay	UNDFND	UNDFD	18	115.4
1.75	5.74	1.89	102.50	5.43	31.84	clay	UNDFND	UNDFD	19	123.6
2.00	6.56	3.39	126.04	3.71	36.74	clayey silt to silty clay	UNDFND	UNDFD	17	223.8
2.35	7.71	0.98	49.86	5.08	42.61	clay	UNDFND	UNDFD	10	62.5
2.70	8.86	5.94	273.60	4.61	49.47	silty clay to clay	UNDFND	UNDFD	40	392.4
2.95	9.68	2.05	100.78	4.90	55.35	clay	UNDFND	UNDFD	21	133.3
3.30	10.83	1.10	48.82	4.45	61.23	clay	UNDFND	UNDFD	11	69.0
3.55	11.65	2.62	142.66	5.44	67.10	clay	UNDFND	UNDFD	26	170.3
3.80	12.47	2.15	111.36	5.17	72.00	clay	UNDFND	UNDFD	22	138.8
4.05	13.29	1.32	75.42	5.72	76.90	clay	UNDFND	UNDFD	13	82.8
4.40	14.44	2.01	104.62	5.20	82.78	clay	UNDFND	UNDFD	20	128.6
4.65	15.26	2.45	158.86	6.49	88.66	clay	UNDFND	UNDFD	24	157.3
4.90	16.08	3.32	197.58	5.96	93.55	clay	UNDFND	UNDFD	33	214.9
5.15	16.90	2.00	133.44	6.68	98.21	clay	UNDFND	UNDFD	20	126.6
5.75	18.86	2.04	102.10	4.99	102.37	clay	UNDFND	UNDFD	20	129.1

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer : BRUCE WILLIAMS
On Site Loc: DECEW DYKE
Job No. : 6 (27+50)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date : 30/07/87 13:45
Cone Used : 1
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.55	1.80	2.83	69.36	2.45	5.39	sandy silt to clayey silt	UNDFND	UNDFD	11	188.2
1.10	3.61	2.65	73.22	2.76	16.16	clayey silt to silty clay	UNDFND	UNDFD	13	175.8
1.65	5.41	3.50	136.88	3.92	26.94	clayey silt to silty clay	UNDFND	UNDFD	17	231.2
2.10	6.89	2.62	110.94	4.24	36.74	silty clay to clay	UNDFND	UNDFD	17	171.8
2.35	7.71	2.54	143.60	5.66	43.59	clay	UNDFND	UNDFD	25	166.2
2.65	8.69	3.33	160.60	4.83	48.98	silty clay to clay	UNDFND	UNDFD	22	218.4
3.15	10.33	1.65	92.02	5.59	56.82	clay	UNDFND	UNDFD	16	106.0
3.40	11.15	6.27	332.56	5.31	64.16	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDRFINED
3.75	12.30	3.58	231.62	6.46	70.04	clay	UNDFND	UNDFD	36	234.2
4.15	13.62	1.72	126.74	7.36	77.39	clay	UNDFND	UNDFD	17	109.6
4.40	14.44	1.18	90.06	7.61	83.76	clay	UNDFND	UNDFD	12	73.2
4.75	15.58	1.21	94.76	7.82	89.63	clay	UNDFND	UNDFD	12	74.7
5.00	16.40	0.93	84.58	9.05	95.51	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.25	17.22	0.86	78.64	9.17	99.18	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.60	18.37	0.76	70.96	9.39	102.12	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.95	19.52	0.64	66.56	10.44	105.55	undefined	UNDFND	UNDFD	UDF	UNDRFINED
6.45	21.16	0.83	50.18	6.05	109.70	clay	UNDFND	UNDFD	8	47.2
6.80	22.31	1.42	79.50	5.58	113.86	clay	UNDFND	UNDFD	14	86.3
7.40	24.28	1.48	101.08	6.85	118.51	clay	UNDFND	UNDFD	15	89.0

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:10.1 FT S OF PC
Job No. :7 (25+08)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 9:00
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.30	0.98	7.12	169.18	2.38	2.94	silty sand to sandy silt	>90	>48	24	UNDEFINED
0.60	1.97	5.30	212.94	4.02	8.82	clayey silt to silty clay	UNDFND	UNDFD	26	352.6
0.90	2.95	5.25	171.98	3.28	14.69	sandy silt to clayey silt	UNDFND	UNDFD	21	348.7
1.40	4.59	3.95	192.80	4.88	22.53	silty clay to clay	UNDFND	UNDFD	26	262.0
1.65	5.41	3.74	170.90	4.57	29.88	silty clay to clay	UNDFND	UNDFD	25	247.1
1.90	6.23	2.54	177.14	6.97	34.78	clay	UNDFND	UNDFD	25	167.1
2.20	7.22	2.87	158.88	5.54	40.16	clay	UNDFND	UNDFD	29	188.6
2.60	8.53	4.02	269.90	6.71	47.02	clay	UNDFND	UNDFD	40	265.1
2.85	9.35	3.10	157.04	5.07	53.39	clay	UNDFND	UNDFD	31	203.0
3.10	10.17	2.31	160.68	6.95	58.29	clay	UNDFND	UNDFD	23	150.2
3.55	11.65	2.57	157.76	6.14	65.14	clay	UNDFND	UNDFD	26	166.8
3.85	12.63	1.45	91.60	6.32	72.49	clay	UNDFND	UNDFD	14	91.8
4.15	13.62	1.12	82.66	7.41	78.37	clay	UNDFND	UNDFD	11	69.1
4.55	14.93	1.38	112.14	8.12	85.23	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.90	16.08	1.50	107.22	7.16	92.57	clay	UNDFND	UNDFD	15	93.6
5.15	16.90	1.13	88.46	7.80	98.21	clay	UNDFND	UNDFD	11	69.0
5.40	17.72	2.15	137.84	6.40	100.65	clay	UNDFND	UNDFD	22	136.6
5.65	18.54	1.74	145.62	8.37	103.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
	91	2.68	176.62	6.59	106.52	clay	UNDFND	UNDFD	27	170.8

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 8.75
Job No. :8 (22+59)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :03/22/00 22:173
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.35	1.15	4.88	120.10	2.46	3.43	sandy silt to clayey silt	UNDFND	UNDFD	20	324.8
1.05	3.44	4.05	154.60	3.82	13.71	clayey silt to silty clay	UNDFND	UNDFD	20	269.1
1.35	4.43	3.41	131.76	3.86	23.51	clayey silt to silty clay	UNDFND	UNDFD	17	225.9
2.10	6.89	2.15	94.34	4.39	33.80	silty clay to clay	UNDFND	UNDFD	14	140.8
2.35	7.71	1.99	94.62	4.77	43.59	clay	UNDFND	UNDFD	20	129.4
2.95	9.68	3.90	213.72	5.49	51.92	clay	UNDFND	UNDFD	39	256.2
3.45	11.32	4.20	134.98	3.21	62.70	clayey silt to silty clay	UNDFND	UNDFD	21	275.8
3.90	12.80	2.89	125.60	4.34	72.00	silty clay to clay	UNDFND	UNDFD	19	188.0
4.15	13.62	1.87	87.32	4.66	78.86	clay	UNDFND	UNDFD	19	119.7
4.60	15.09	1.38	48.98	3.56	85.72	silty clay to clay	UNDFND	UNDFD	9	86.1
4.95	16.24	0.69	61.28	8.91	93.55	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.25	17.22	0.96	55.04	5.71	98.94	clay	UNDFND	UNDFD	10	57.5
5.60	18.37	1.77	93.44	5.27	102.12	clay	UNDFND	UNDFD	18	111.1
5.85	19.19	1.54	68.42	4.46	105.06	clay	UNDFND	UNDFD	15	94.8
6.30	20.67	0.69	48.40	7.05	108.48	clay	UNDFND	UNDFD	7	37.8
6.60	21.65	0.75	54.90	7.31	112.15	clay	UNDFND	UNDFD	8	41.6
6.95	22.80	0.77	61.78	7.98	115.33	clay	UNDFND	UNDFD	8	42.7
7.20	23.62	0.78	52.58	6.71	118.27	clay	UNDFND	UNDFD	8	42.9
7.65	25.10	1.02	78.36	7.67	121.69	clay	UNDFND	UNDFD	10	58.4
7.95	26.08	1.23	87.40	7.09	125.36	clay	UNDFND	UNDFD	12	71.9
8.50	27.89	1.60	113.24	7.06	129.52	clay	UNDFND	UNDFD	16	96.2

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 62'N-
Job No. :9 (21+88)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 10:15
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.50	1.64	4.69	79.76	1.70	4.90	silty sand to sandy silt	80-90	>48	16	UNDEFINED
0.75	2.46	3.95	128.34	3.25	12.25	clayey silt to silty clay	UNDFND	UNDFD	20	262.5
1.05	3.44	3.12	135.46	4.34	17.63	silty clay to clay	UNDFND	UNDFD	21	207.0
1.35	4.43	2.90	144.62	4.99	23.51	clay	UNDFND	UNDFD	29	191.4
1.80	5.91	2.71	101.34	3.75	30.86	clayey silt to silty clay	UNDFND	UNDFD	14	178.3
2.15	7.05	1.89	62.82	3.32	38.69	clayey silt to silty clay	UNDFND	UNDFD	9	123.5
2.50	8.20	2.13	82.02	3.86	45.55	silty clay to clay	UNDFND	UNDFD	14	138.6
3.05	10.01	3.56	197.34	5.55	54.37	clay	UNDFND	UNDFD	36	233.5
3.40	11.15	3.67	161.74	4.41	63.19	silty clay to clay	UNDFND	UNDFD	24	240.2
3.80	12.47	2.24	80.22	3.58	70.53	clayey silt to silty clay	UNDFND	UNDFD	11	144.4
4.30	14.11	1.60	70.46	4.41	79.35	clay	UNDFND	UNDFD	16	101.1
4.70	15.42	1.47	79.02	5.36	88.17	clay	UNDFND	UNDFD	15	92.4
5.20	17.06	2.53	121.52	4.80	96.98	clay	UNDFND	UNDFD	25	162.2
5.60	18.37	1.37	83.80	6.13	101.88	clay	UNDFND	UNDFD	14	84.0
5.95	19.52	1.65	103.06	6.26	105.55	clay	UNDFND	UNDFD	16	102.1
6.30	20.67	1.41	91.28	6.49	108.97	clay	UNDFND	UNDFD	14	85.7
6.75	22.15	1.20	75.32	6.30	112.89	clay	UNDFND	UNDFD	12	71.2
7.05	23.13	1.02	82.84	8.10	116.56	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.55	24.77	0.77	58.32	7.53	120.47	clay	UNDFND	UNDFD	8	42.0
7.95	26.08	0.79	73.90	9.30	124.87	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.50	27.89	0.76	64.86	8.55	129.52	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.10	29.86	0.77	63.42	8.19	135.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.35	30.68	0.75	62.34	8.33	139.31	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.60	31.50	0.77	54.18	7.08	141.75	clay	UNDFND	UNDFD	8	38.6
9.95	32.64	0.88	56.66	6.41	144.69	clay	UNDFND	UNDFD	9	46.1
10.45	34.28	1.00	64.30	6.46	148.85	clay	UNDFND	UNDFD	10	53.0
10.70	35.10	0.96	61.84	6.43	152.52	clay	UNDFND	UNDFD	10	50.2
10.95	35.93	0.83	54.86	6.58	154.97	clay	UNDFND	UNDFD	8	41.4

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 162'N
Job No. :10 (20+88)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 11:20
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.55	1.80	5.84	173.04	2.97	5.39	sandy silt to clayey silt	UNDFND	UNDFD	23	388.6
0.85	2.79	4.35	197.62	4.55	13.71	silty clay to clay	UNDFND	UNDFD	29	288.8
1.30	4.27	4.26	140.62	3.30	21.06	clayey silt to silty clay	UNDFND	UNDFD	21	282.4
1.60	5.25	3.81	191.12	5.01	28.41	clay	UNDFND	UNDFD	38	252.2
2.05	6.73	3.25	139.18	4.29	35.76	silty clay to clay	UNDFND	UNDFD	22	214.1
2.30	7.55	2.82	122.90	4.36	42.61	silty clay to clay	UNDFND	UNDFD	19	185.1
2.65	8.69	2.47	109.92	4.45	48.49	silty clay to clay	UNDFND	UNDFD	16	161.3
2.90	9.51	3.05	135.16	4.43	54.37	silty clay to clay	UNDFND	UNDFD	20	199.9
3.15	10.33	3.71	202.70	5.46	59.27	clay	UNDFND	UNDFD	37	243.6
3.50	11.48	3.45	160.88	4.67	65.14	silty clay to clay	UNDFND	UNDFD	23	225.4
3.75	12.30	2.38	118.96	5.00	71.02	clay	UNDFND	UNDFD	24	153.8
4.10	13.45	1.65	73.32	4.44	76.90	clay	UNDFND	UNDFD	17	104.9
4.35	14.27	1.23	79.28	6.45	82.78	clay	UNDFND	UNDFD	12	76.4
4.90	16.08	0.95	68.24	7.18	90.61	clay	UNDFND	UNDFD	10	57.3
5.30	17.39	1.47	92.14	6.26	98.94	clay	UNDFND	UNDFD	15	91.4
5.55	18.21	1.07	67.62	6.33	102.12	clay	UNDFND	UNDFD	11	64.1
6.10	20.01	1.46	112.50	7.73	106.04	clay	UNDFND	UNDFD	15	89.4
6.50	21.33	2.31	141.86	6.14	110.68	clay	UNDFND	UNDFD	23	145.7
6.80	22.31	1.53	106.82	6.99	114.11	clay	UNDFND	UNDFD	15	93.2
7.10	23.29	1.42	103.56	7.29	117.04	clay	UNDFND	UNDFD	14	85.6
7.60	24.93	1.30	113.38	8.73	120.96	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.95	26.08	0.88	79.98	9.10	125.12	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.30	27.23	0.86	88.80	10.37	128.54	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.65	28.38	0.77	72.20	9.34	131.97	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 14.75
Job No. :11 (19+88)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 12:45
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.50	1.64	4.36	64.08	1.47	4.90	silty sand to sandy silt	80-90	>48	15	UNDRFINED
0.90	2.95	3.36	132.34	3.94	13.71	clayey silt to silty clay	UNDFND	UNDFD	17	222.9
1.65	5.41	3.56	159.26	4.47	24.98	silty clay to clay	UNDFND	UNDFD	24	235.6
2.25	7.38	3.10	166.26	5.37	38.21	clay	UNDFND	UNDFD	31	203.8
2.65	8.69	2.01	125.56	6.24	48.00	clay	UNDFND	UNDFD	20	130.9
3.00	9.84	1.48	92.44	6.23	55.35	clay	UNDFND	UNDFD	15	95.1
3.45	11.32	2.33	157.24	6.76	63.19	clay	UNDFND	UNDFD	23	150.8
3.80	12.47	2.84	168.98	5.95	71.02	clay	UNDFND	UNDFD	28	184.5
4.15	13.62	2.20	126.92	5.78	77.88	clay	UNDFND	UNDFD	22	141.1
4.50	14.76	1.62	97.72	6.03	84.74	clay	UNDFND	UNDFD	16	102.4
4.75	15.58	1.05	92.34	8.81	90.61	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.00	16.40	0.63	67.88	10.83	95.51	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.25	17.22	0.86	84.84	9.84	99.18	undefined	UNDFND	UNDFD	UDF	UNDRFINED
5.90	19.36	1.07	83.22	7.78	103.59	clay	UNDFND	UNDFD	11	64.0
6.20	20.34	0.73	85.28	11.64	108.24	undefined	UNDFND	UNDFD	UDF	UNDRFINED
6.50	21.33	1.51	144.38	9.54	111.17	undefined	UNDFND	UNDFD	UDF	UNDRFINED
6.95	22.80	1.14	120.34	10.55	114.84	undefined	UNDFND	UNDFD	UDF	UNDRFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:decew dyke12'S-P
Job No. :12 (17+62)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 13:25
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.25	0.82	4.40	108.52	2.47	2.45	sandy silt to clayey silt	UNDFND	UNDFD	18	292.9
0.70	2.30	4.22	174.34	4.13	9.31	clayey silt to silty clay	UNDFND	UNDFD	21	280.6
1.00	3.28	4.46	208.10	4.66	16.65	silty clay to clay	UNDFND	UNDFD	30	296.4
1.30	4.27	3.03	166.90	5.51	22.53	clay	UNDFND	UNDFD	30	200.4
1.55	5.09	2.11	119.94	5.69	27.92	clay	UNDFND	UNDFD	21	138.7
2.35	7.71	1.40	100.66	7.17	38.21	clay	UNDFND	UNDFD	14	91.0
2.75	9.02	1.67	100.22	6.01	49.96	clay	UNDFND	UNDFD	17	107.8
3.00	9.84	2.13	115.82	5.43	56.33	clay	UNDFND	UNDFD	21	138.3
3.25	10.66	2.82	173.64	6.15	61.23	clay	UNDFND	UNDFD	28	184.0
3.70	12.14	3.29	223.62	6.79	68.08	clay	UNDFND	UNDFD	33	215.0
3.95	12.96	1.52	109.38	7.18	74.94	clay	UNDFND	UNDFD	15	96.5
4.30	14.11	2.17	149.98	6.91	80.82	clay	UNDFND	UNDFD	22	139.2
4.75	15.58	1.91	139.30	7.29	88.66	clay	UNDFND	UNDFD	19	121.5

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE
Job No. :13 4.5ft S DC8
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :31/07/87 14:15
Cone Used :
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.55	1.80	5.57	192.60	3.46	5.39	clayey silt to silty clay	UNDFND	UNDFD	28	370.8
0.90	2.95	5.66	189.52	3.35	14.20	sandy silt to clayey silt	UNDFND	UNDFD	23	376.5
1.25	4.10	6.10	253.00	4.15	21.06	clayey silt to silty clay	UNDFND	UNDFD	31	405.2
1.65	5.41	5.02	240.18	4.78	28.41	silty clay to clay	UNDFND	UNDFD	33	333.0
2.05	6.73	2.01	81.16	4.03	36.25	silty clay to clay	UNDFND	UNDFD	13	131.8
2.35	7.71	2.90	117.44	4.05	43.10	silty clay to clay	UNDFND	UNDFD	19	190.5
2.80	9.19	1.97	100.14	5.08	50.45	clay	UNDFND	UNDFD	20	127.9
3.05	10.01	2.14	110.54	5.16	57.31	clay	UNDFND	UNDFD	21	139.0
3.30	10.83	1.28	80.28	6.25	62.21	clay	UNDFND	UNDFD	13	81.4
3.55	11.65	2.08	121.04	5.82	67.10	clay	UNDFND	UNDFD	21	134.2
3.90	12.80	2.36	160.68	6.80	72.98	clay	UNDFND	UNDFD	24	152.5
4.25	13.94	1.62	123.98	7.68	79.84	clay	UNDFND	UNDFD	16	102.3
4.60	15.09	1.44	121.52	8.44	86.70	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.05	16.57	1.41	101.10	7.18	94.53	clay	UNDFND	UNDFD	14	87.5
5.30	17.39	1.51	123.22	8.17	99.67	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.55	18.21	1.80	139.04	7.74	102.12	clay	UNDFND	UNDFD	18	112.5
6.00	19.69	4.35	246.70	5.68	105.55	clay	UNDFND	UNDFD	43	282.2

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 8.75'
Job No. :14 (12+58.75)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :04/08/87 9:20
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
1.15	3.77	2.60	104.88	4.02	11.27	silty clay to clay	UNDFND	UNDFD	17	172.5
1.50	4.92	2.54	101.88	4.00	25.96	silty clay to clay	UNDFND	UNDFD	17	167.8
1.95	6.40	2.63	90.36	3.44	33.80	clayey silt to silty clay	UNDFND	UNDFD	13	173.0
2.95	9.68	1.47	73.18	4.99	48.00	clay	UNDFND	UNDFD	15	94.6
3.40	11.15	0.88	40.82	4.65	62.21	clay	UNDFND	UNDFD	9	54.4
3.95	12.96	0.84	44.90	5.34	72.00	clay	UNDFND	UNDFD	8	51.2
4.20	13.78	0.95	52.22	5.50	79.84	clay	UNDFND	UNDFD	9	57.9
4.80	15.75	0.89	49.22	5.55	88.17	clay	UNDFND	UNDFD	9	53.2
5.25	17.22	1.32	79.62	6.03	98.21	clay	UNDFND	UNDFD	13	81.4
5.90	19.36	1.36	116.42	8.58	103.59	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.45	21.16	1.11	91.12	8.22	109.46	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.85	22.47	1.03	64.90	6.27	114.11	clay	UNDFND	UNDFD	10	60.2
7.15	23.46	0.88	61.50	6.96	117.53	clay	UNDFND	UNDFD	9	49.7
7.75	25.43	0.84	74.76	8.91	121.94	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.65	28.38	0.68	64.18	9.49	129.28	undefined	UNDFND	UNDFD	UDF	UNDEFINED
9.40	30.84	1.07	83.42	7.78	137.35	clay	UNDFND	UNDFD	11	59.6
9.95	32.64	1.92	94.76	4.93	143.71	clay	UNDFND	UNDFD	19	115.4
10.40	34.12	1.56	159.46	10.25	148.60	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYFE 11.5'
Job No. :15 11.5ft S DC5
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :03/26/00 22:46
Cone Used :1 1st
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.65	2.13	3.80	104.40	2.74	6.37	sandy silt to clayey silt	UNDFND	UNDFD	15	253.1
1.15	3.77	3.44	160.26	4.66	17.63	silty clay to clay	UNDFND	UNDFD	23	228.1
1.55	5.09	1.98	89.36	4.50	26.45	clay	UNDFND	UNDFD	20	130.5
2.10	6.89	1.71	69.46	4.06	35.76	silty clay to clay	UNDFND	UNDFD	11	111.5
3.40	11.15	1.26	60.48	4.81	53.88	clay	UNDFND	UNDFD	13	80.2
3.65	11.98	0.64	37.58	5.86	69.06	clay	UNDFND	UNDFD	6	38.1

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 11.5'
Job No. :15 11.5ft S DC5
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :04/08/87 10:30
Cone Used :1 2nd
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.80	2.62	2.42	89.06	3.69	7.84	clayey silt to silty clay	UNDFND	UNDFD	12	160.4
1.45	4.76	2.30	108.12	4.69	22.04	clay	UNDFND	UNDFD	23	152.1
1.85	6.07	1.64	65.86	4.00	32.33	silty clay to clay	UNDFND	UNDFD	11	107.4
2.45	8.04	1.17	41.50	3.54	42.12	silty clay to clay	UNDFND	UNDFD	8	75.4
3.00	9.84	1.38	76.48	5.53	53.39	clay	UNDFND	UNDFD	14	88.6
3.35	10.99	1.03	63.64	6.20	62.21	clay	UNDFND	UNDFD	10	64.2
3.65	11.98	0.69	43.40	6.33	68.57	clay	UNDFND	UNDFD	7	41.1
4.50	14.76	1.37	71.70	5.25	79.84	clay	UNDFND	UNDFD	14	85.6
5.45	17.88	1.65	96.50	5.84	97.47	clay	UNDFND	UNDFD	17	103.7
6.05	19.85	1.13	71.42	6.32	105.30	clay	UNDFND	UNDFD	11	67.8
6.30	20.67	1.00	75.26	7.55	109.46	clay	UNDFND	UNDFD	10	58.3
6.85	22.47	1.27	94.20	7.43	113.37	clay	UNDFND	UNDFD	13	75.9
7.10	23.29	0.94	81.24	8.68	117.29	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer : BRUCE WILLIAMS
On Site Loc: DECEW DYKE 7.75'
Job No. : 16 (7+57.75)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date : 04/08/87 10:55
Cone Used : 1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.85	2.79	3.13	119.38	3.81	8.33	clayey silt to silty clay	UNDFND	UNDFD	16	208.1
1.30	4.27	2.80	147.94	5.28	21.06	clay	UNDFND	UNDFD	28	185.2
1.65	5.41	2.20	100.82	4.59	28.90	clay	UNDFND	UNDFD	22	144.4
2.40	7.87	3.20	98.34	3.08	39.67	clayey silt to silty clay	UNDFND	UNDFD	16	210.4
3.15	10.33	2.15	84.36	3.92	54.37	silty clay to clay	UNDFND	UNDFD	14	140.0
3.75	12.30	1.69	110.38	6.54	67.59	clay	UNDFND	UNDFD	17	107.9
4.30	14.11	1.73	61.32	3.54	78.86	silty clay to clay	UNDFND	UNDFD	12	110.0
5.10	16.73	1.34	115.10	8.62	92.08	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.10	20.01	1.74	91.52	5.25	103.83	clay	UNDFND	UNDFD	17	108.8
6.65	21.82	2.41	150.26	6.22	111.42	clay	UNDFND	UNDFD	24	152.6
7.20	23.62	2.15	147.16	6.85	116.80	clay	UNDFND	UNDFD	21	134.1
7.85	25.75	1.74	90.54	5.22	122.67	clay	UNDFND	UNDFD	17	105.8

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 9.5'
Job No. :17 (5+9.5)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :04/08/85 11:25
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.80	2.62	4.65	144.04	3.10	7.84	sandy silt to clayey silt	UNDFND	UNDFD	19	309.4
1.20	3.94	4.03	219.78	5.45	19.59	clay	UNDFND	UNDFD	40	267.6
1.50	4.92	5.84	195.26	3.34	26.45	sandy silt to clayey silt	UNDFND	UNDFD	23	387.8
2.10	6.89	3.94	163.76	4.16	35.27	clayey silt to silty clay	UNDFND	UNDFD	20	260.2
2.75	9.02	2.33	133.52	5.74	47.51	clay	UNDFND	UNDFD	23	151.8
3.35	10.99	1.56	86.24	5.53	59.76	clay	UNDFND	UNDFD	16	99.9
3.60	11.81	1.86	130.48	7.01	68.08	clay	UNDFND	UNDFD	19	119.5
3.90	12.80	3.01	215.98	7.18	73.47	clay	UNDFND	UNDFD	30	195.6
4.35	14.27	1.42	98.38	6.93	80.82	clay	UNDFND	UNDFD	14	89.1
5.00	16.40	2.09	149.84	7.16	91.59	clay	UNDFND	UNDFD	21	133.3
5.75	18.86	2.14	151.12	7.07	101.63	clay	UNDFND	UNDFD	21	135.5
6.80	22.31	1.93	135.50	7.03	110.44	clay	UNDFND	UNDFD	19	120.3

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer :BRUCE WILLIAMS
On Site Loc:DECEW DYKE 9.5'
Job No. :18 (2+59.5)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date :04/08/87 11:50
Cone Used :1
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
0.55	1.80	3.43	228.14	6.66	5.39	clay	UNDFND	UNDFD	34	228.0
1.40	4.59	2.85	172.86	6.06	19.10	clay	UNDFND	UNDFD	29	188.8
1.90	6.23	3.92	105.90	2.70	32.33	sandy silt to clayey silt	UNDFND	UNDFD	16	259.3
2.30	7.55	3.31	149.20	4.50	41.14	silty clay to clay	UNDFND	UNDFD	22	218.1
2.90	9.51	1.61	118.78	7.36	50.94	clay	UNDFND	UNDFD	16	104.1
3.65	11.98	0.96	52.96	5.54	64.16	clay	UNDFND	UNDFD	10	59.4
4.15	13.62	1.33	96.78	7.30	76.41	clay	UNDFND	UNDFD	13	83.2
4.80	15.75	1.69	119.20	7.07	87.68	clay	UNDFND	UNDFD	17	106.4
5.10	16.73	0.97	81.46	8.36	96.98	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.60	18.37	1.74	134.66	7.73	101.39	clay	UNDFND	UNDFD	17	109.1
5.85	19.19	2.25	119.06	5.30	105.06	clay	UNDFND	UNDFD	22	142.3
6.45	21.16	0.68	86.12	12.74	109.22	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.30	23.95	0.48	79.24	16.41	116.31	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.80	25.59	5.08	107.16	2.11	122.92	sandy silt to clayey silt	UNDFND	UNDFD	20	328.8

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

Engineer : 5BRUCE WILLIAMS
On Site Loc: DECEW DYKE 2.5ft
Job No. : 19 (3+74)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date : 604/08/87 13:1
Cone Used :
Water table (meters) : 5

DEPTH (meters)	(feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su kPa
1.20	3.94	1.52	58.84	3.86	11.76	silty clay to clay	UNDFND	UNDFD	10	100.8
1.60	5.25	1.15	53.52	4.66	27.43	clay	UNDFND	UNDFD	11	74.7
1.85	6.07	2.49	131.50	5.27	33.80	clay	UNDFND	UNDFD	25	163.9
2.10	6.89	1.52	69.52	4.56	38.69	clay	UNDFND	UNDFD	15	99.0
2.60	8.53	1.60	69.28	4.32	46.04	clay	UNDFND	UNDFD	16	103.9
3.15	10.33	1.97	102.02	5.17	56.33	clay	UNDFND	UNDFD	20	127.7
3.80	12.47	1.08	71.42	6.63	68.08	clay	UNDFND	UNDFD	11	67.2
4.10	13.45	0.66	62.60	9.45	77.39	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.45	14.60	0.81	68.62	8.44	83.76	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.20	17.06	1.77	123.94	7.00	94.53	clay	UNDFND	UNDFD	18	111.7
5.55	18.21	1.72	121.86	7.09	101.63	clay	UNDFND	UNDFD	17	107.5
6.10	20.01	0.76	72.76	9.57	106.04	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.55	21.49	0.57	64.92	11.40	110.93	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.85	22.47	0.76	63.60	8.34	114.60	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.25	23.79	0.60	78.20	13.02	118.02	undefined	UNDFND	UNDFD	UDF	UNDEFINED
7.60	24.93	0.53	66.52	12.52	121.69	undefined	UNDFND	UNDFD	UDF	UNDEFINED
8.10	26.57	0.40	51.82	13.03	125.85	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Ontario Hydro

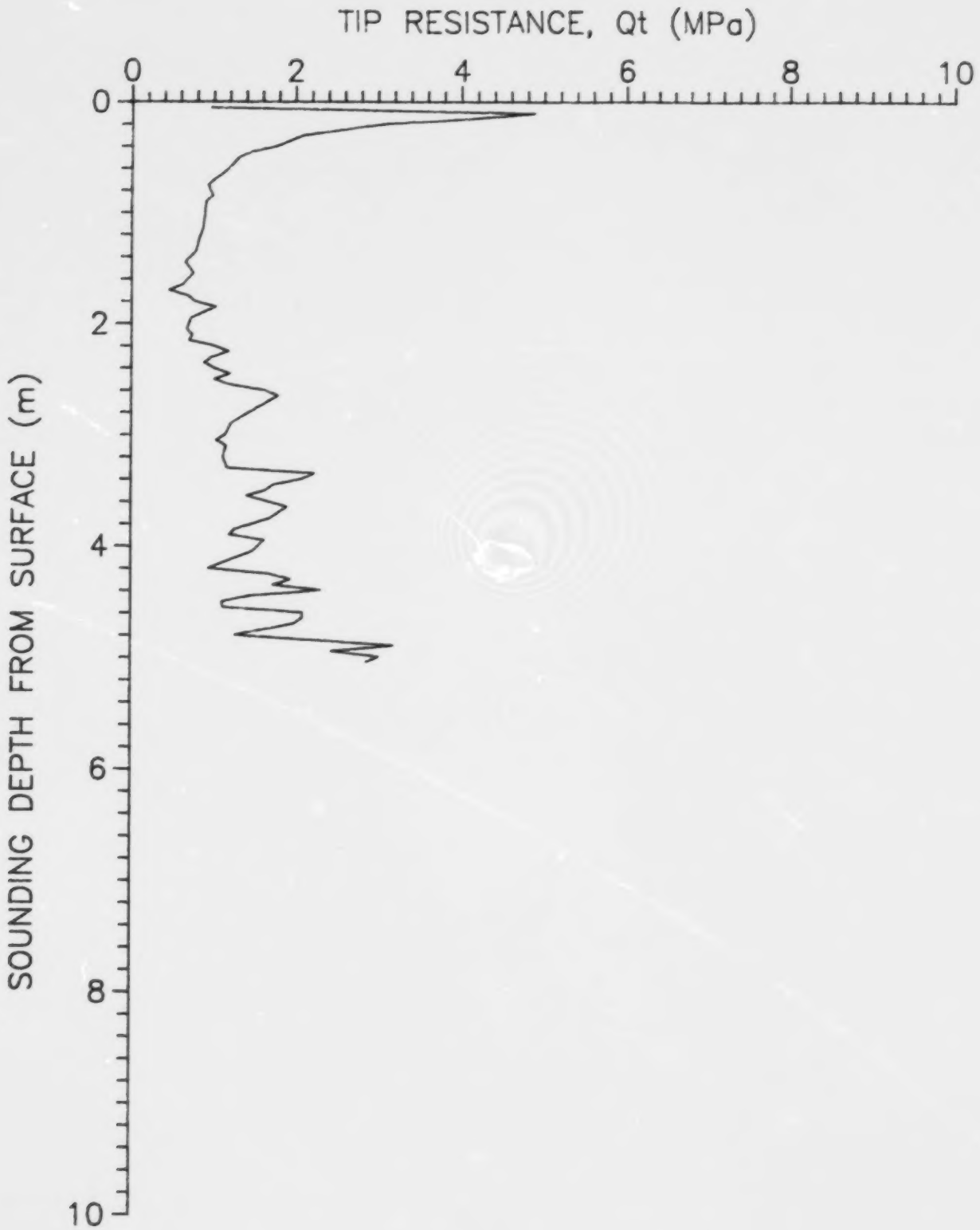
Engineer : BRUCE WILLIAMS
On Site Loc: DECEW DYKE
Job No. : 20 (22+00)
Tot. Unit Wt. (avg) : 19.6 kN/m^3

CPT Date : 04/08/87 2:30
Cone Used :
Water table (meters) : 5

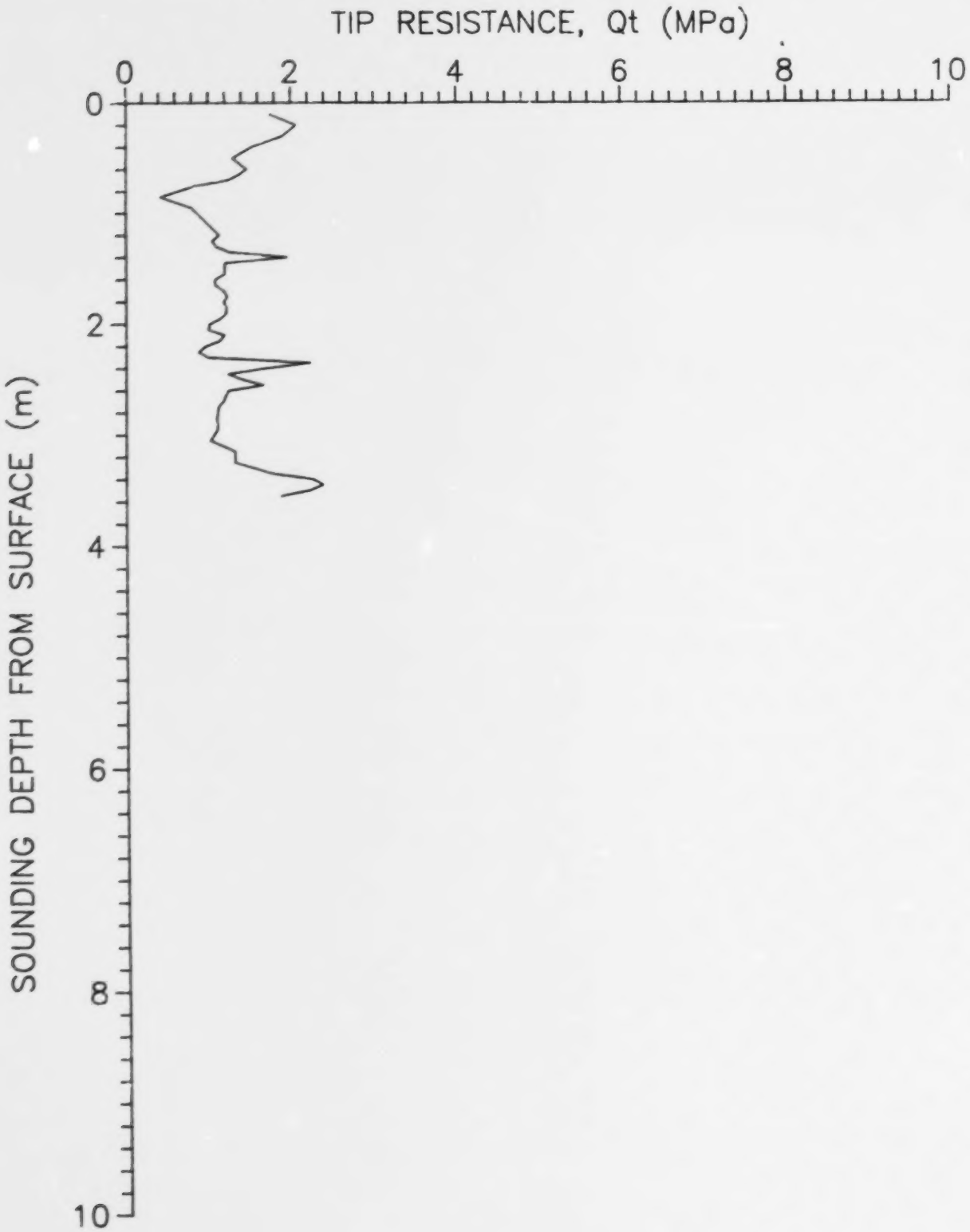
DEPTH (meters)	DEPTH (feet)	Qc (avg) (MN/m^2)	Fs (avg) (kN/m^2)	Rf (avg) (%)	SIGV' (kPa)	SOIL BEHAVIOUR TYPE	Bq - Dr (%)	PHI deg.	SPT N	Su kPa
0.40	1.31	1.59	62.86	3.95	3.92	silty clay to clay	UNDFND	UNDFD	11	105.7
0.70	2.30	2.43	99.40	4.09	10.78	silty clay to clay	UNDFND	UNDFD	16	161.2
1.05	3.44	7.04	226.88	3.22	17.14	sandy silt to clayey silt	UNDFND	UNDFD	28	468.3
1.35	4.43	2.22	182.20	8.20	23.51	undefined	UNDFND	UNDFD	UDF	UNDEFINED
1.85	6.07	2.32	174.10	7.49	31.35	clay	UNDFND	UNDFD	23	152.8
2.30	7.55	1.94	174.78	9.03	40.65	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2.95	9.68	1.21	120.76	10.00	51.43	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.30	10.83	1.72	119.26	6.95	61.23	clay	UNDFND	UNDFD	17	110.2
3.55	11.65	1.05	109.00	10.42	67.10	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3.90	12.80	0.86	181.26	21.08	72.98	undefined	UNDFND	UNDFD	UDF	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 15

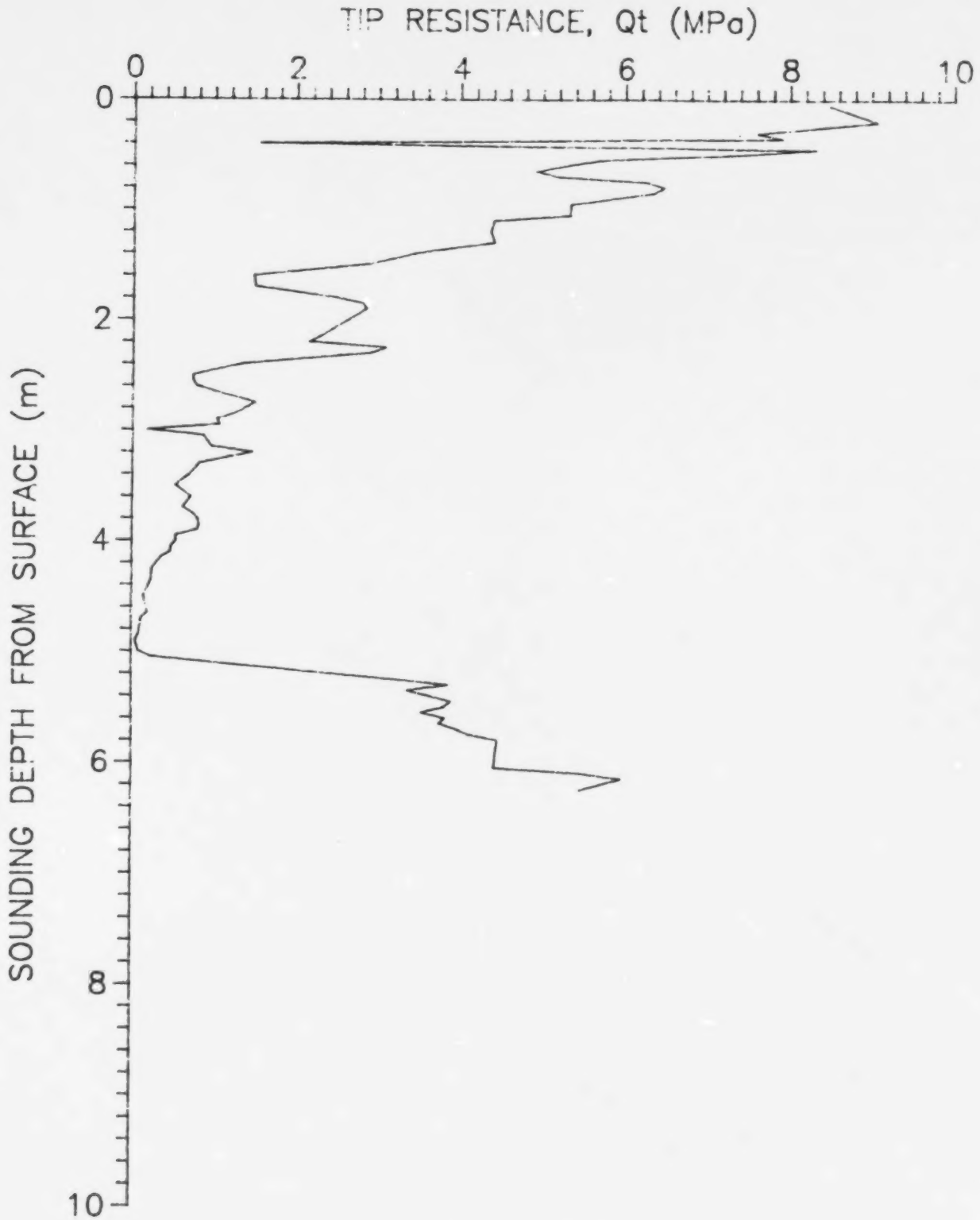
**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****



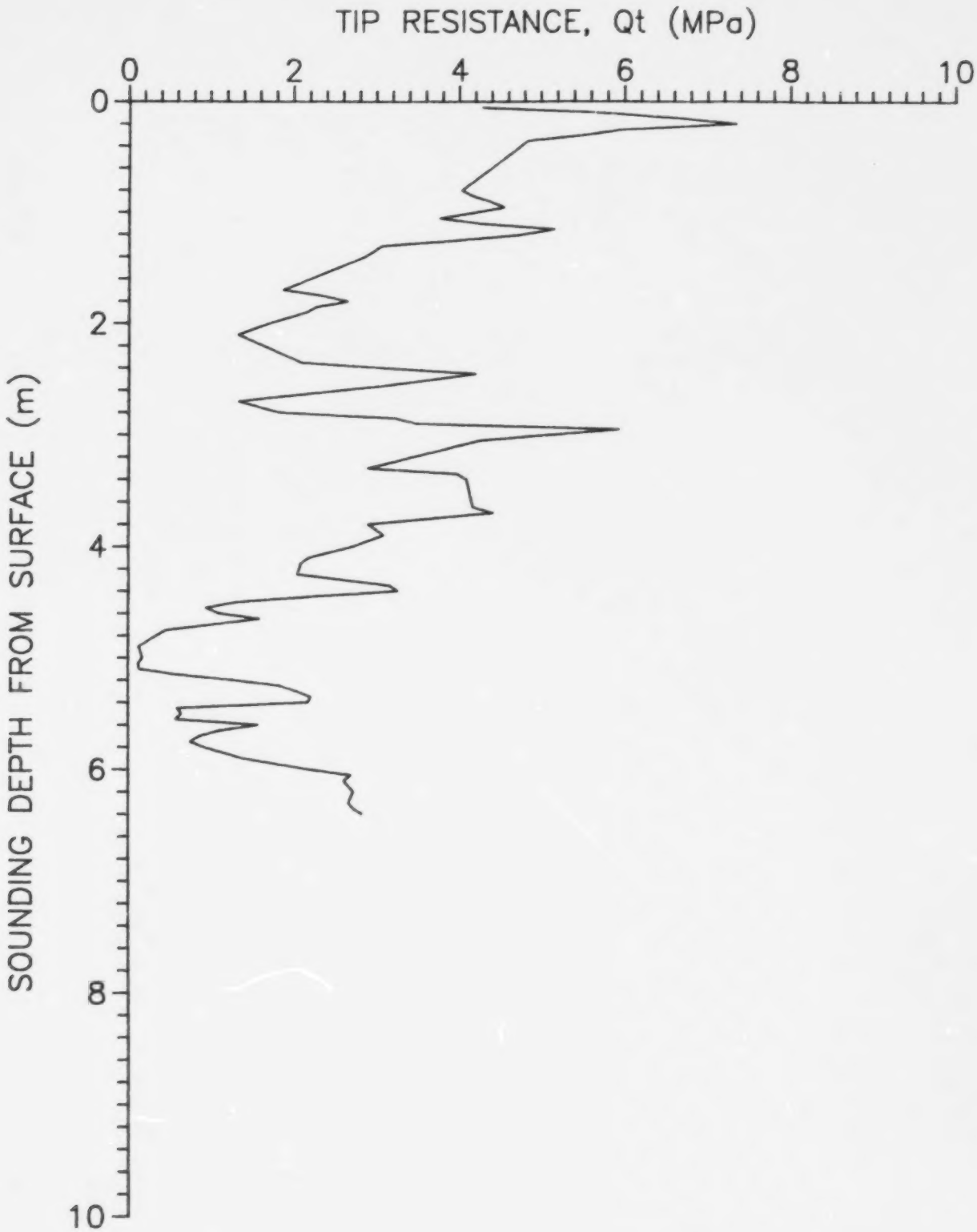
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW ROCKFILL BERM 3ft SOUTH OF PIEZ#2
Qt CORRECTED FOR PWP



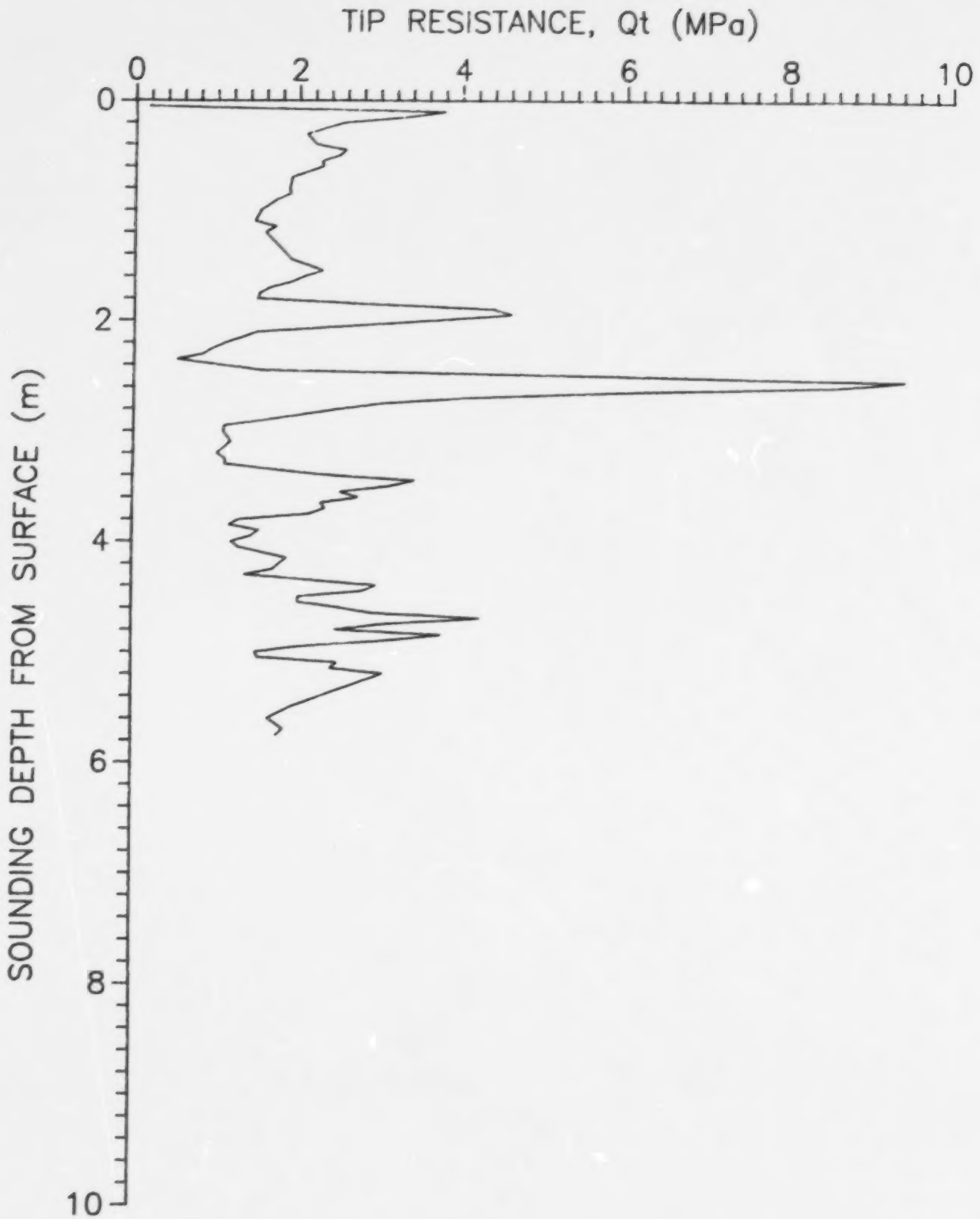
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW ROCKFILL BERM 13ft NORTH OF PIEZ#2
Qt CORRECTED FOR PWP



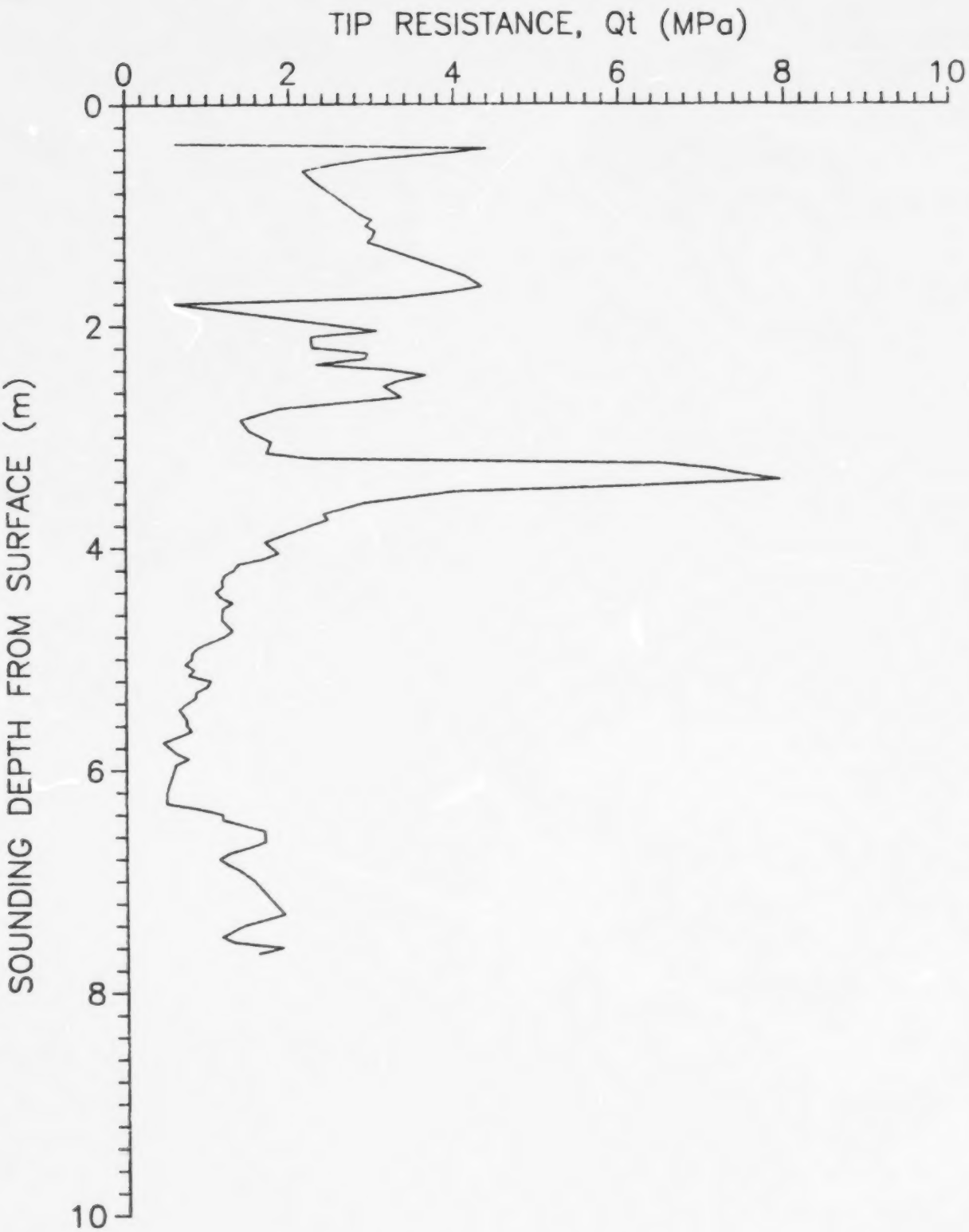
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 9ft SE OF PC-15 (35+00)
Qt CORRECTED FOR PWP



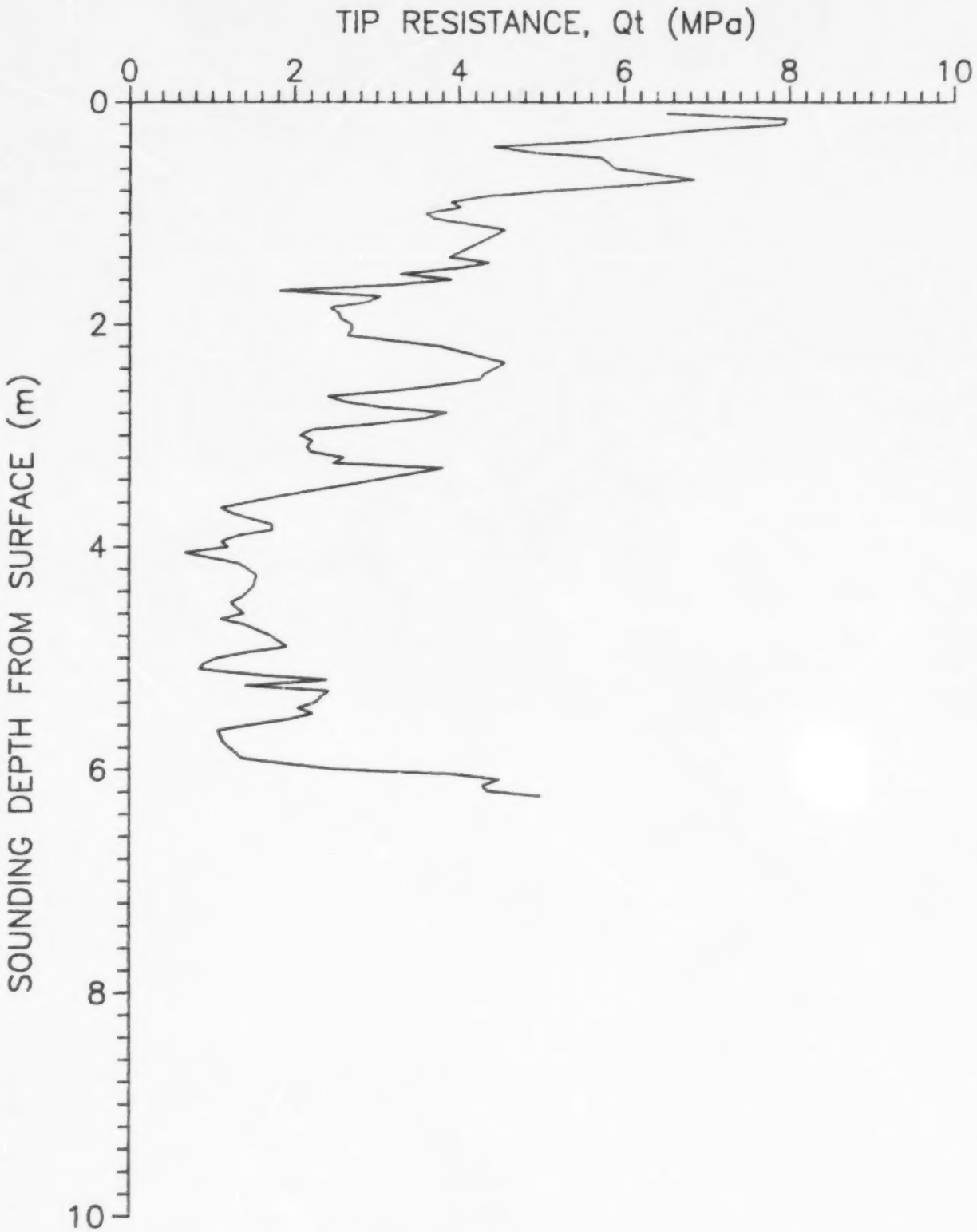
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 11ft SOUTH OF PC-14 (32+50)
Qt CORRECTED FOR PWP



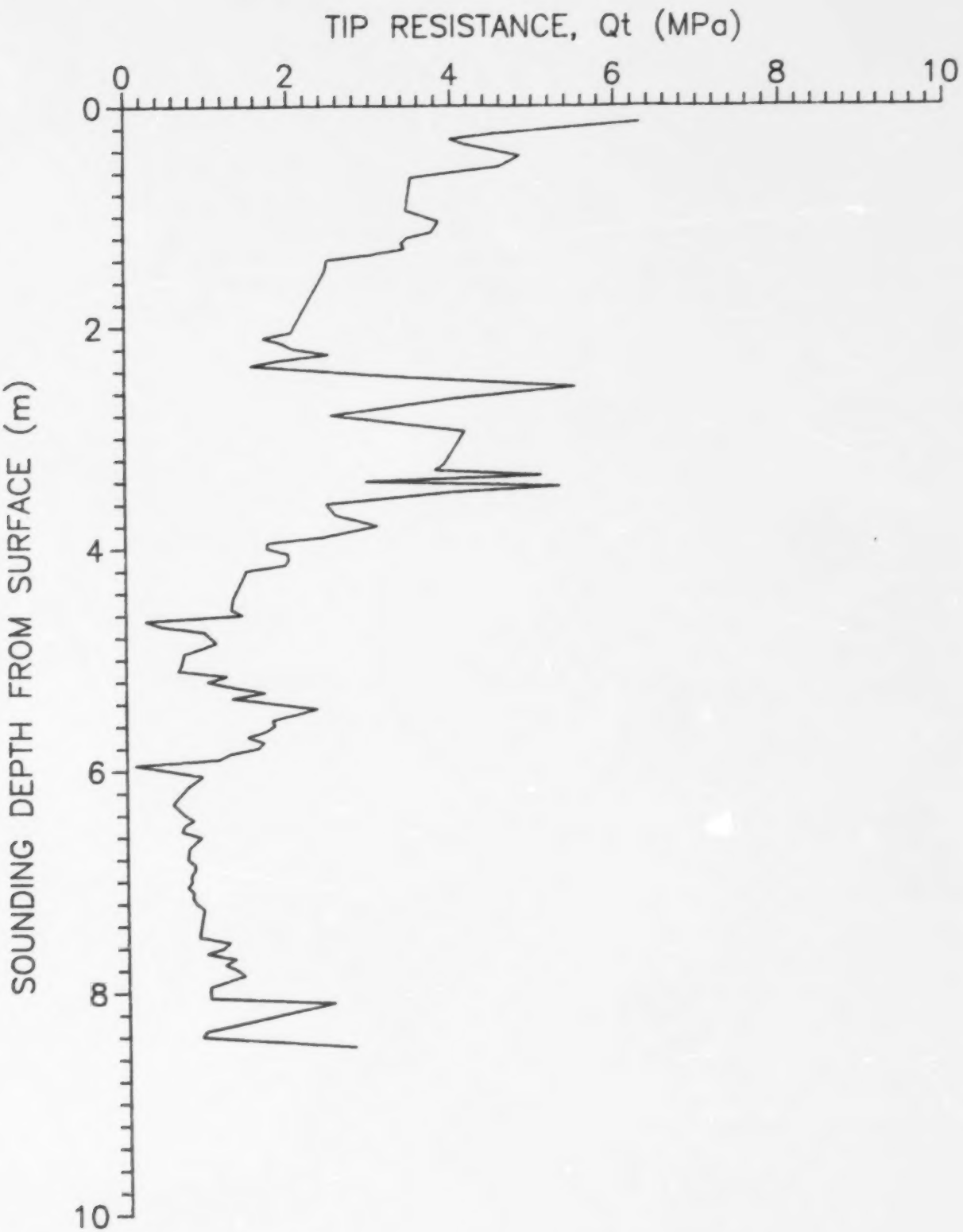
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 11.8ft SOUTH PC-13 (30+00)
Qt CORRECTED FOR PWP



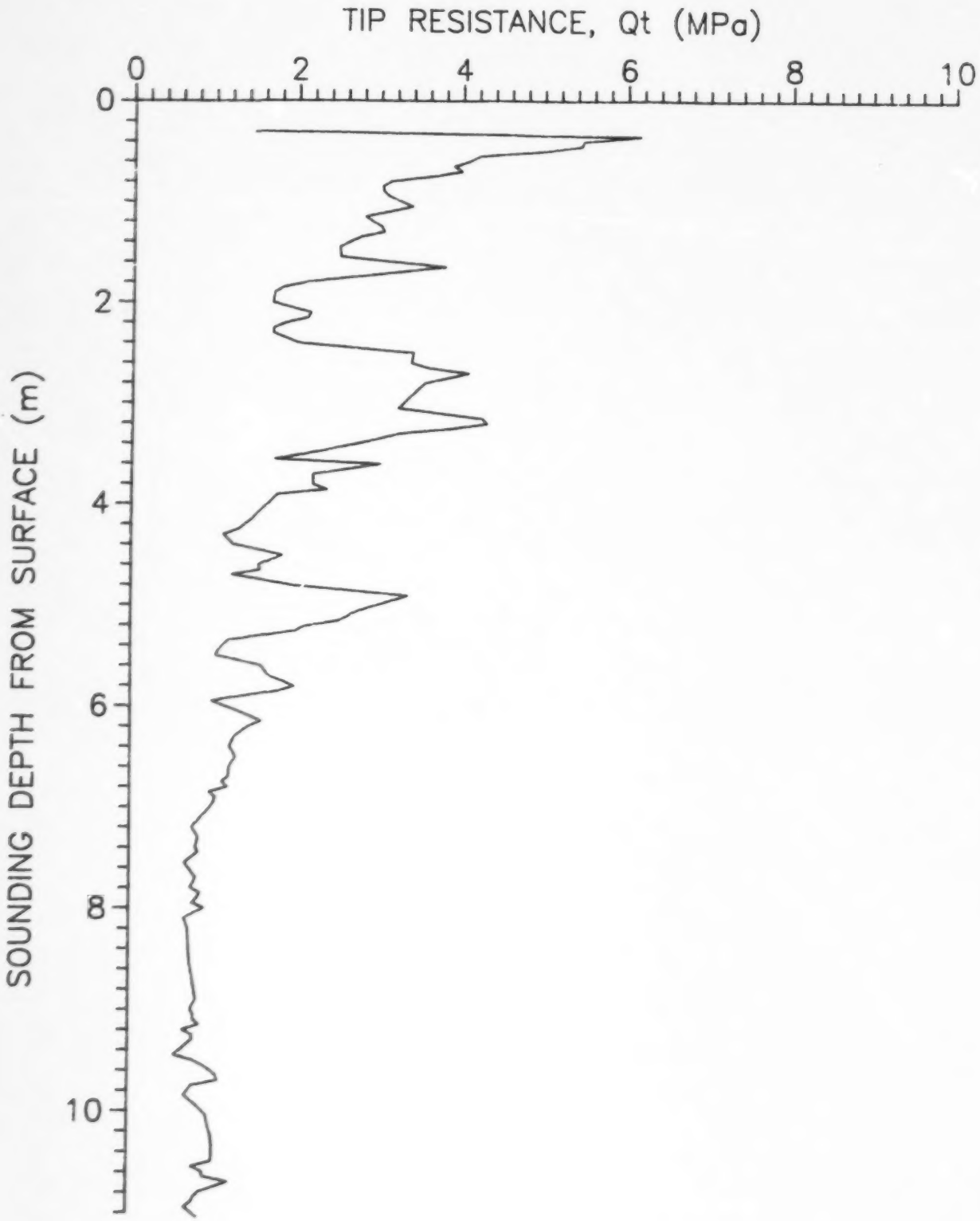
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 6.75ft SOUTH PC-12 (27+50)
Qt CORRECTED FOR PWP



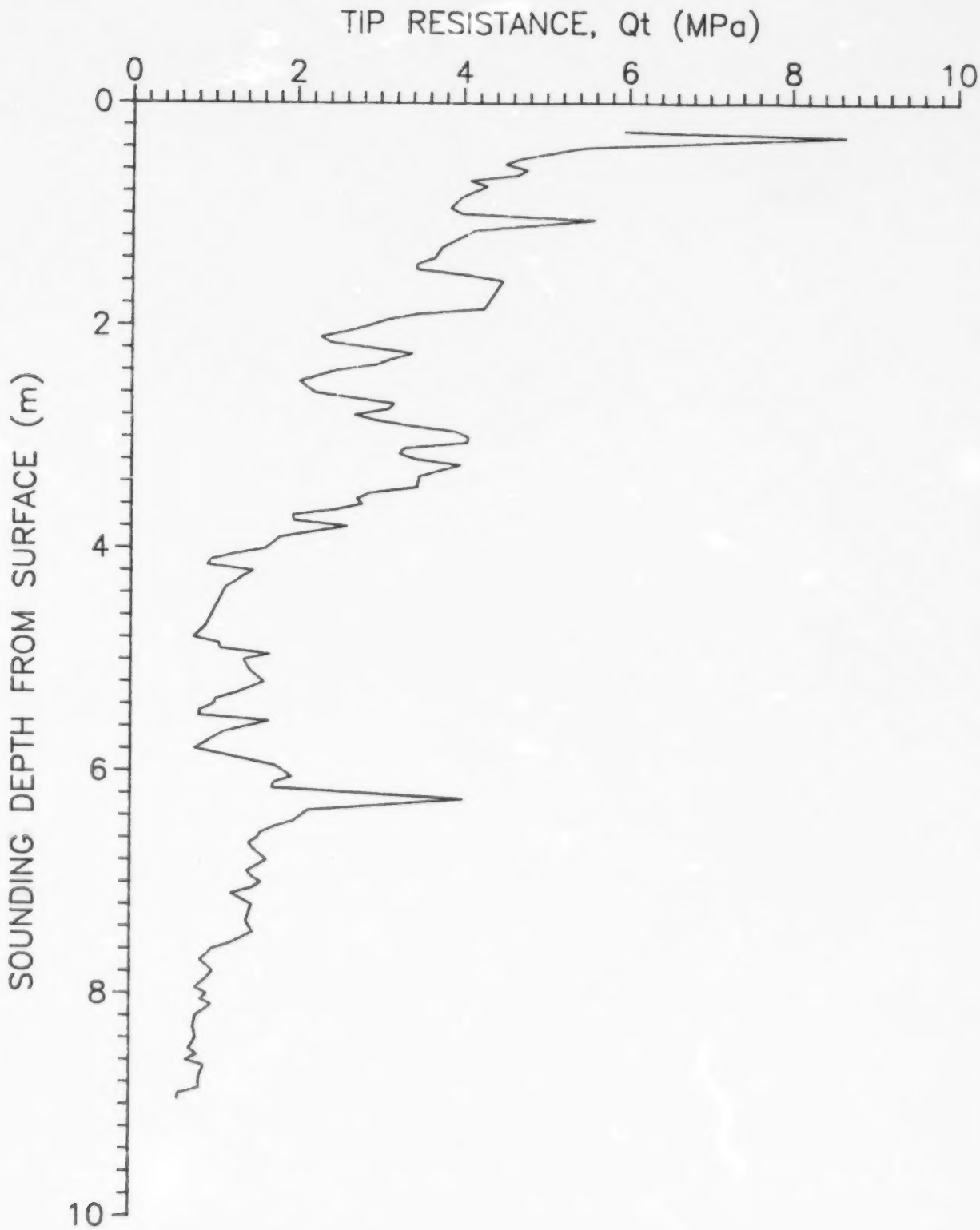
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 10.17ft SOUTH PC11 (25+08)
Qt CORRECTED FOR PWP



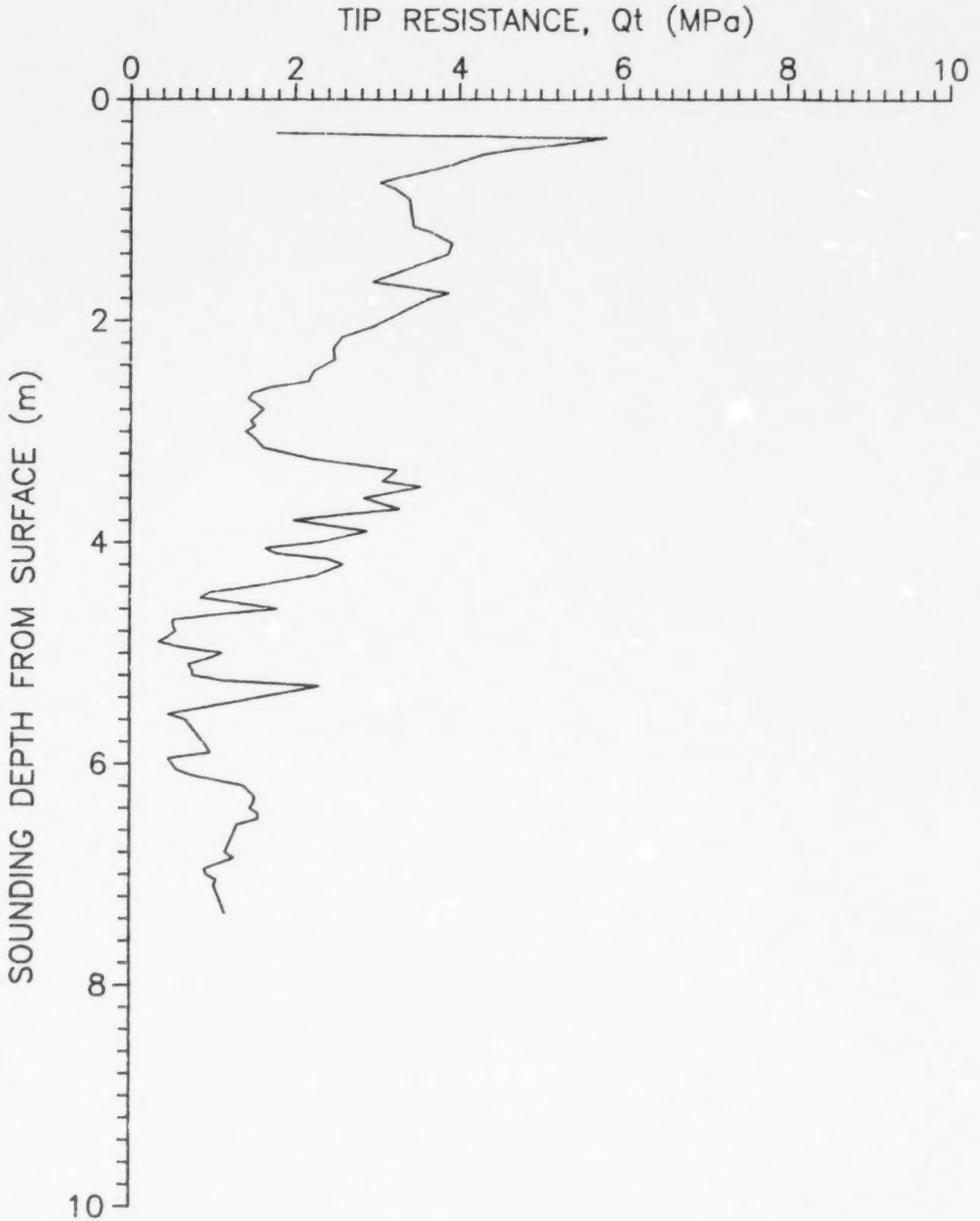
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 8.75ft SOUTH PC10 (22+59)
Qt CORRECTED FOR PWP



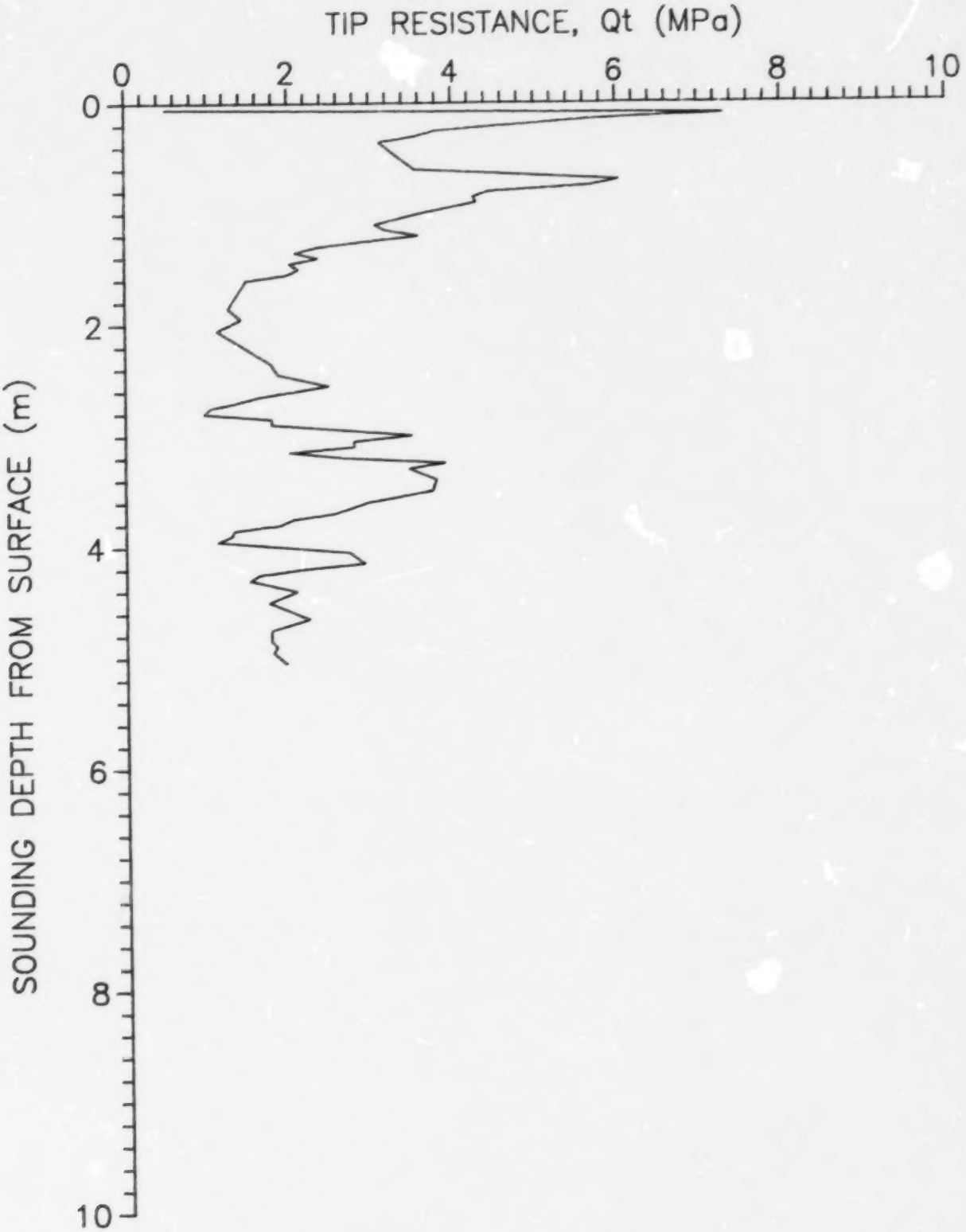
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 100ft SOUTH OF VALLEY CENTRE
Qt CORRECTED FOR PWP (21+88)



TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 162ft NORTH PC10 (20+88)
Qt CORRECTED FOR PWP

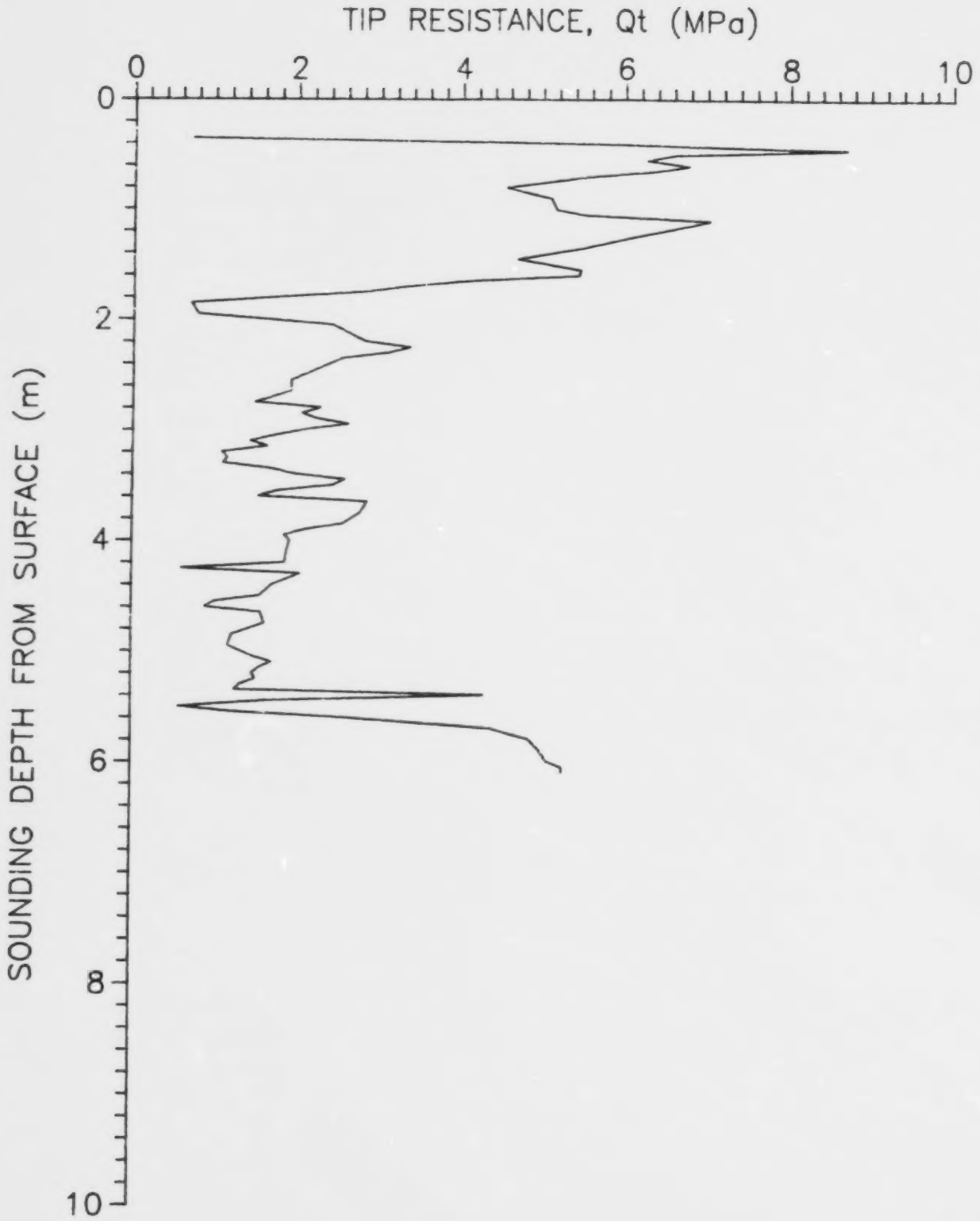


TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 14.75ft NORTH PC9
Qt CORRECTED FOR PWP (19+88)

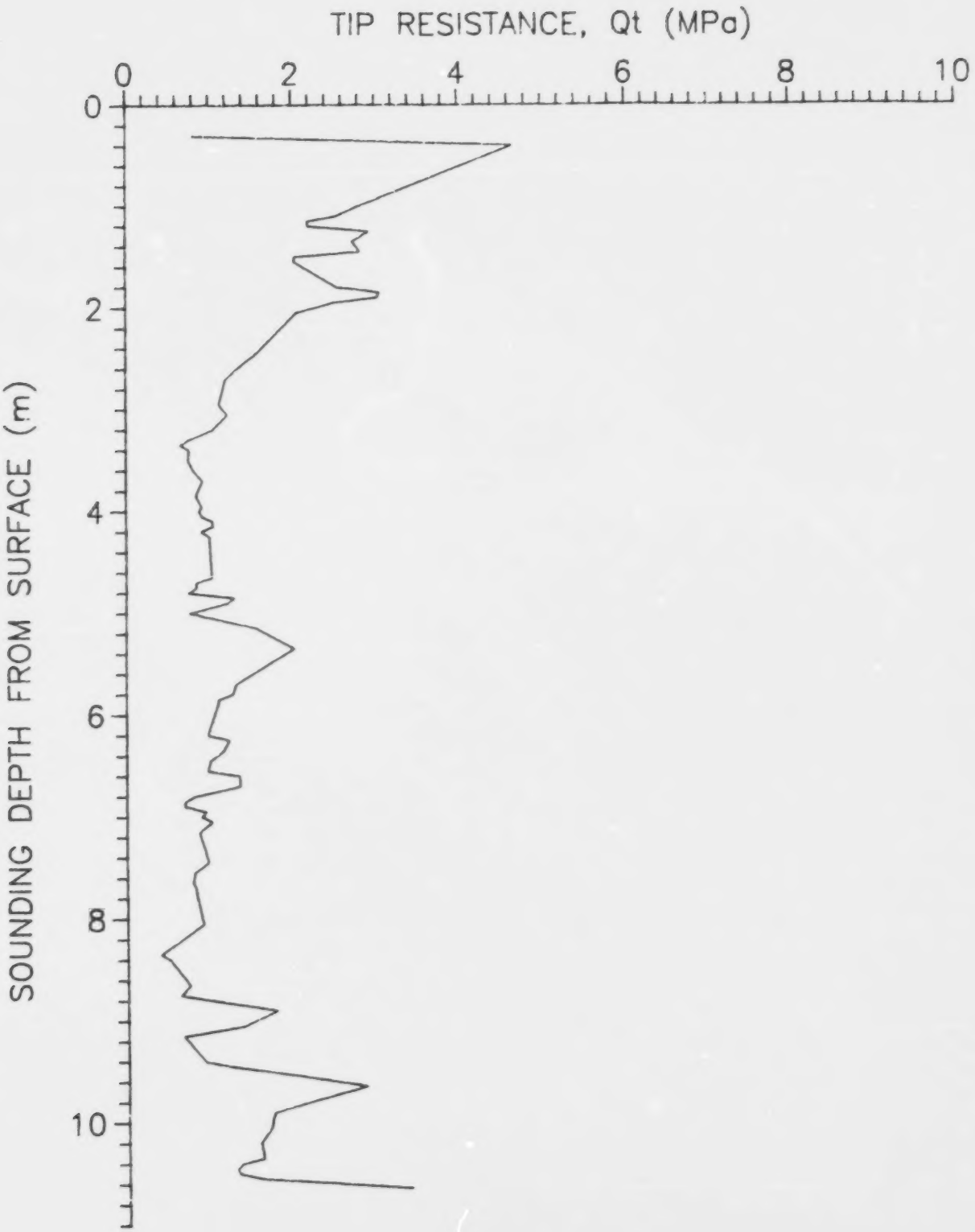


TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 12ft SOUTH OF PC8 (17+62)
Qt CORRECTED FOR PWP

88-7



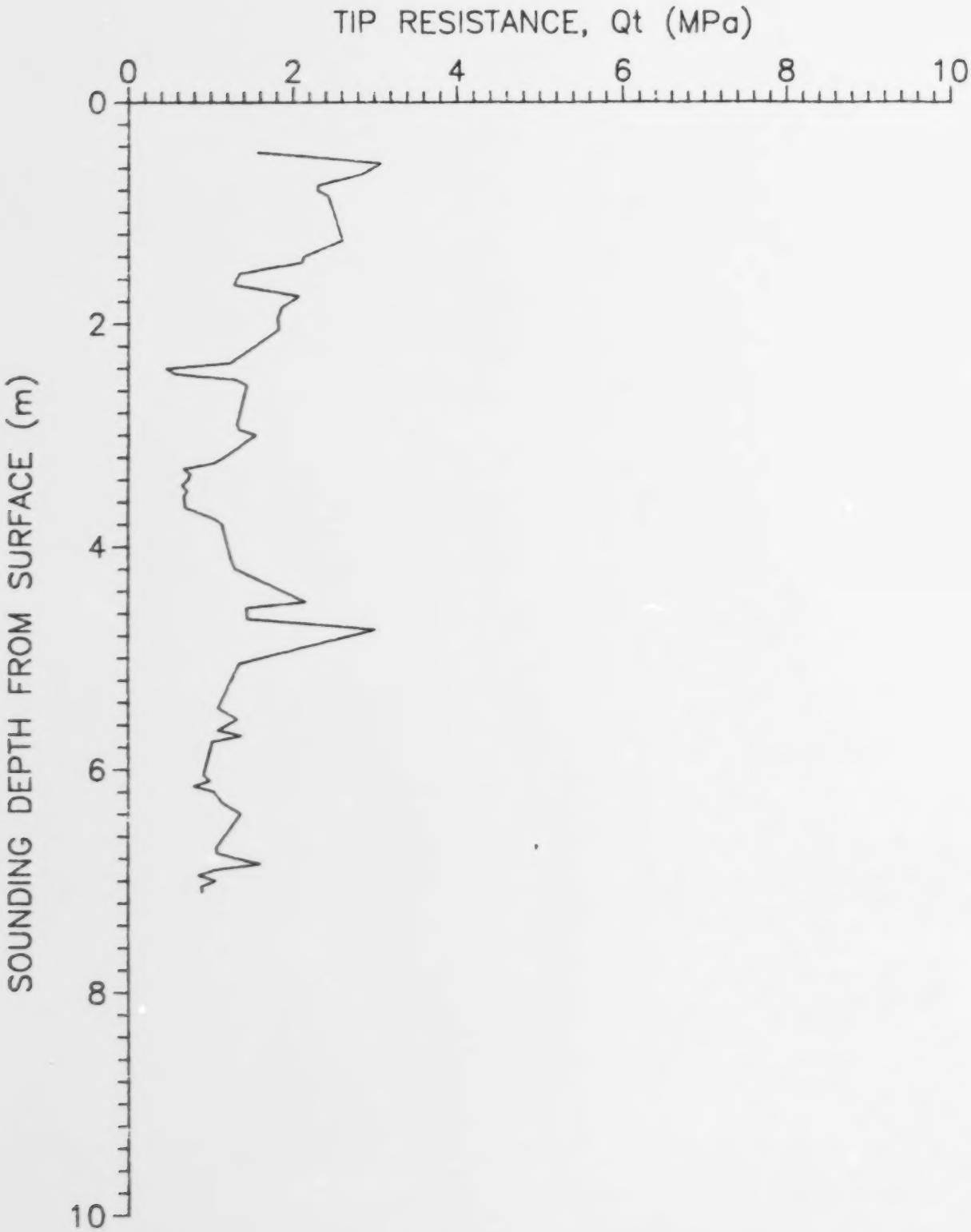
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 4.5ft SOUTH OF PC8
Qt CORRECTED FOR PWP



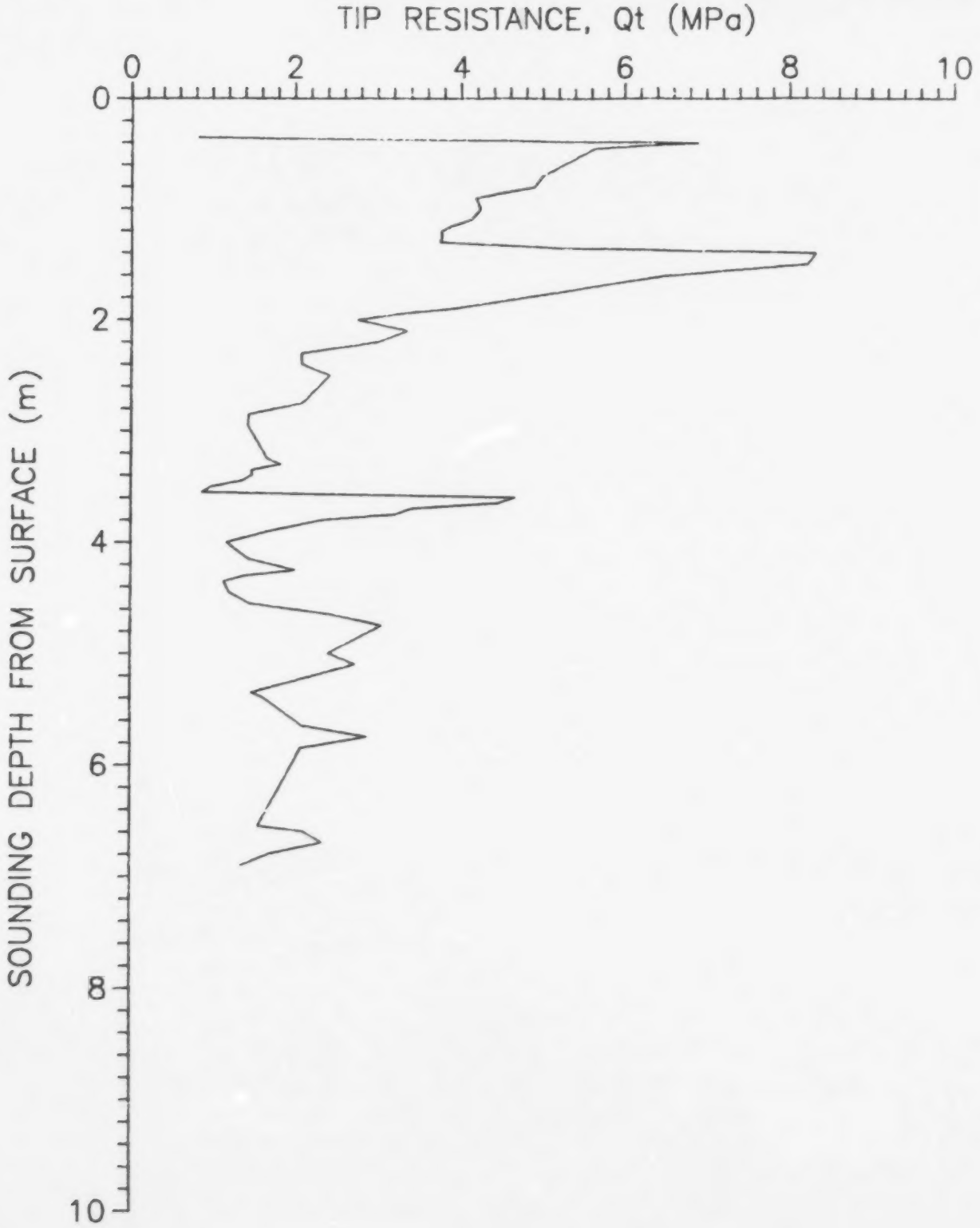
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 8.75ft SOUTH PC6 (12+58.75)
Qt CORRECTED FOR PWP

88-7

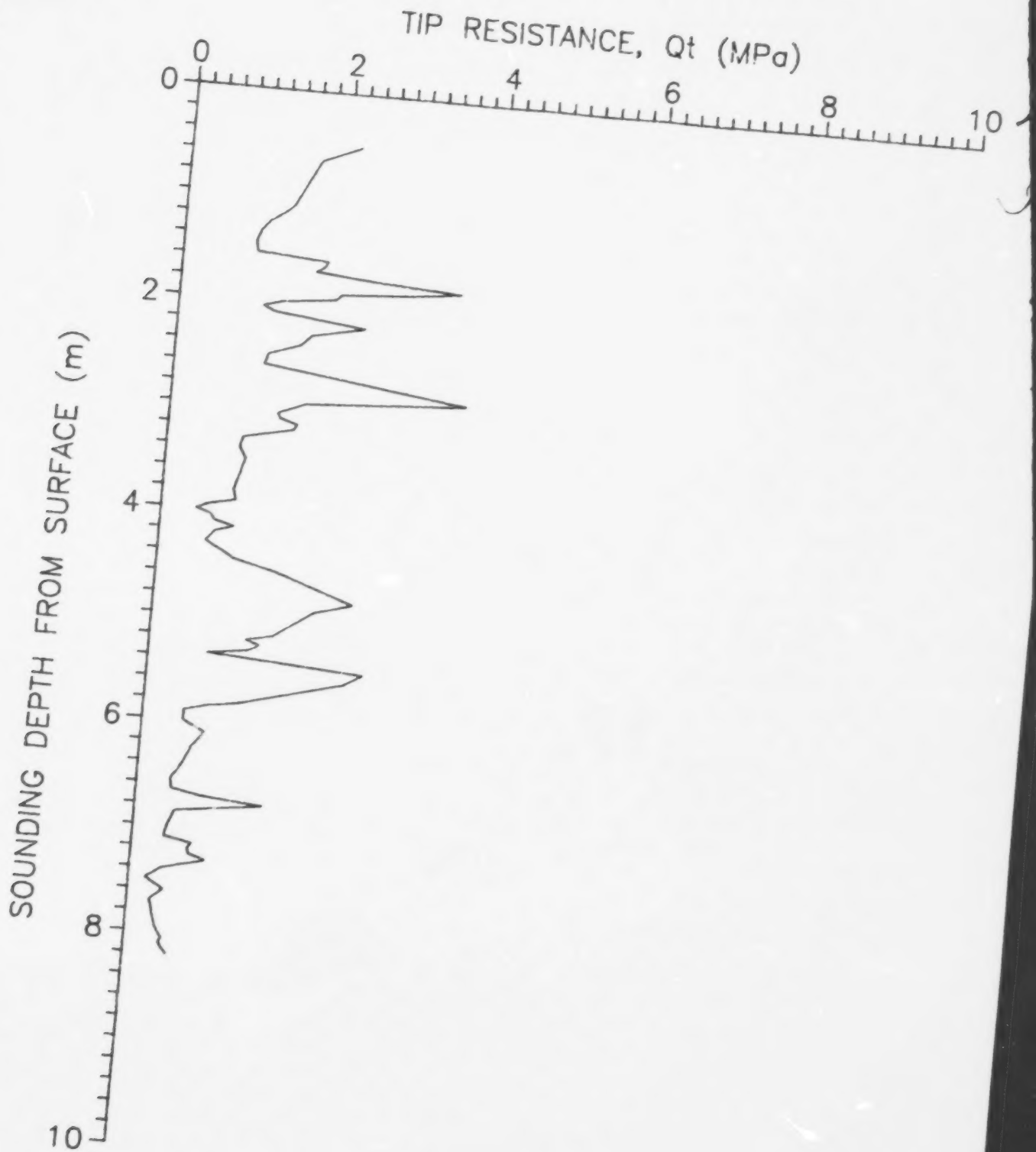
TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 11.5ft SOUTH PC5
Qt CORRECTED FOR PWP



TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 11.5ft SOUTH PC5 (2ND)
Qt CORRECTED FOR PWP

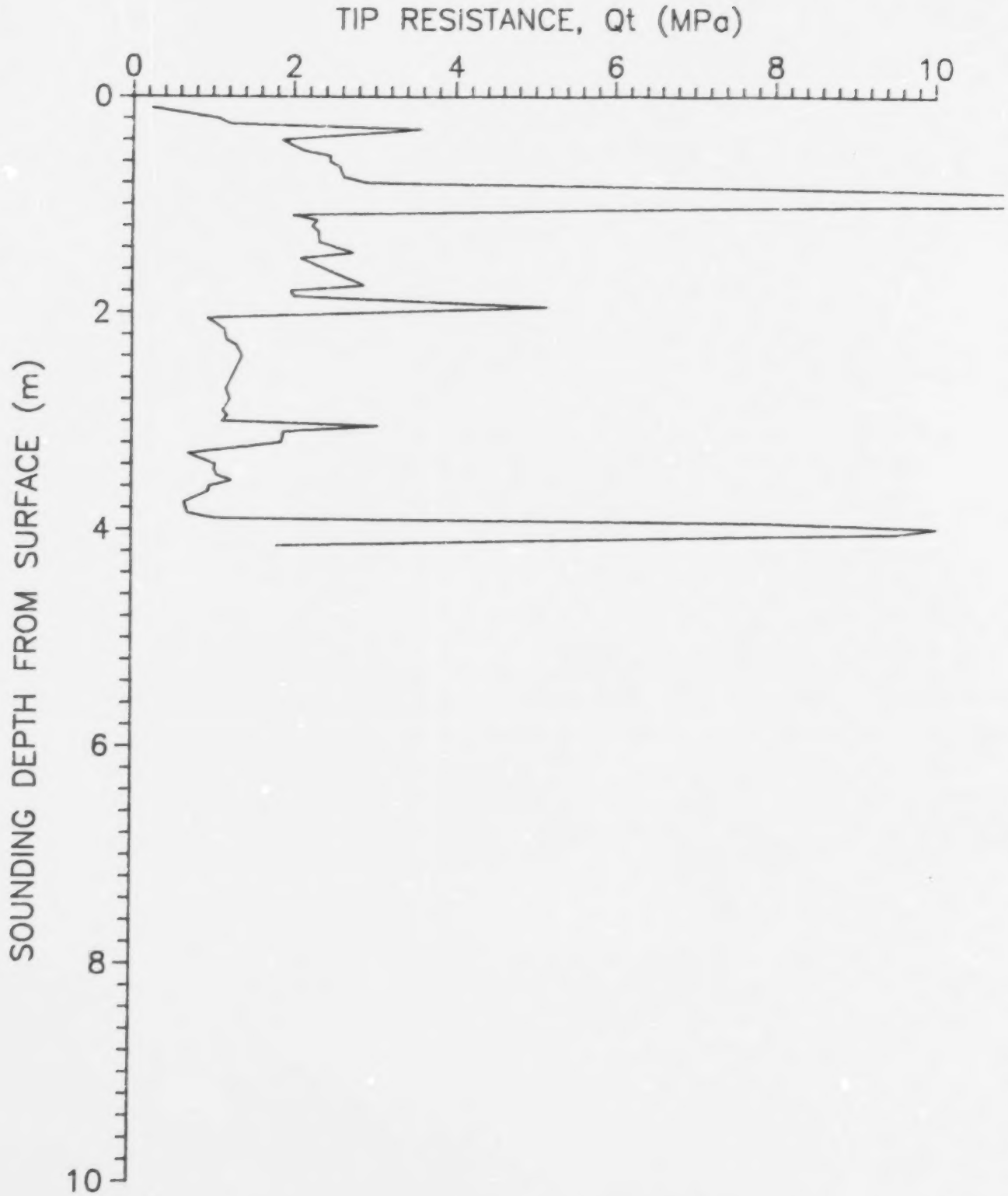


TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 9.5ft 'SOUTH PC3
Qt CORRECTED FOR PWP (5+09.5)

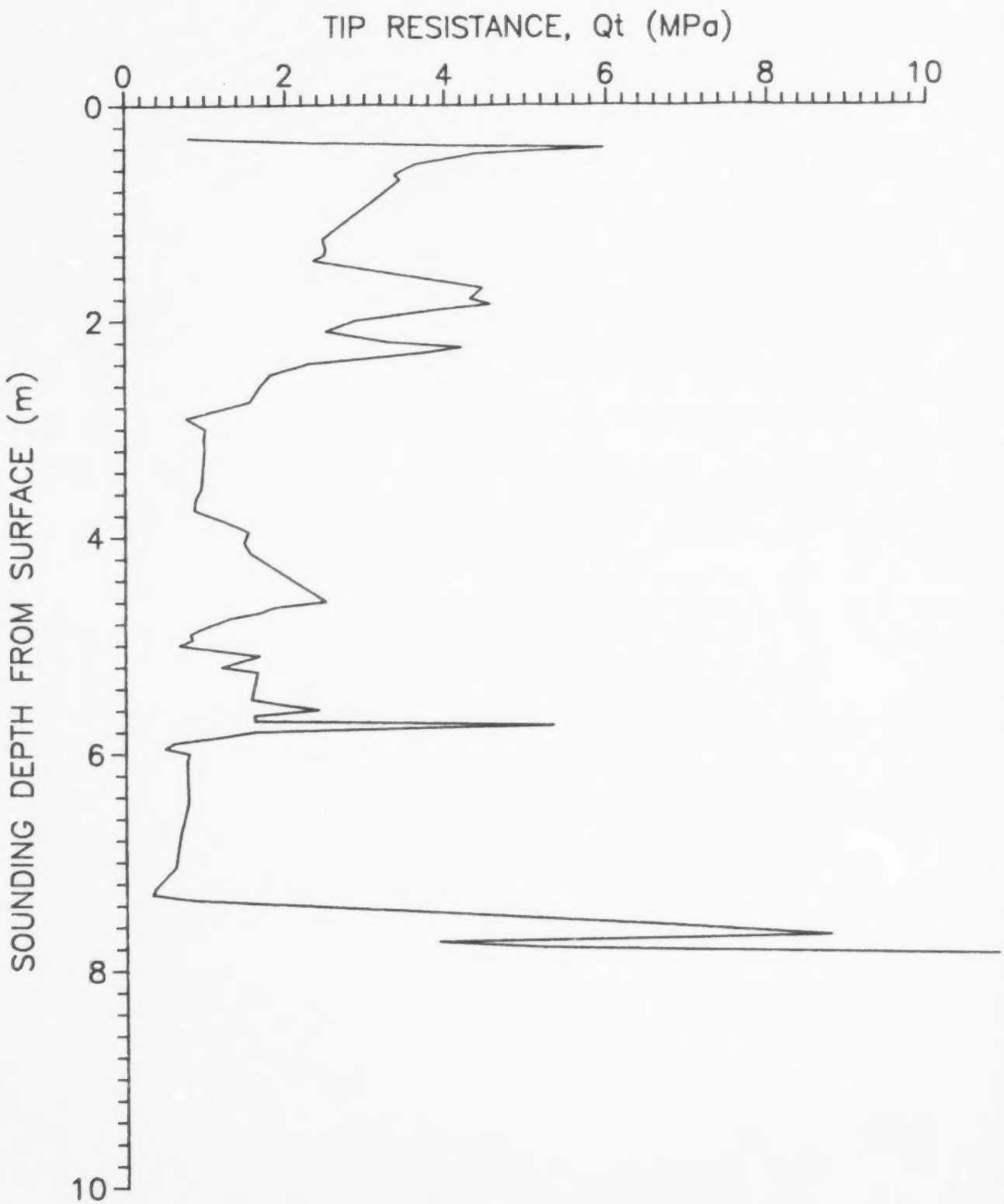


TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 2.5ft O/C
Qt CORRECTED FOR PWP

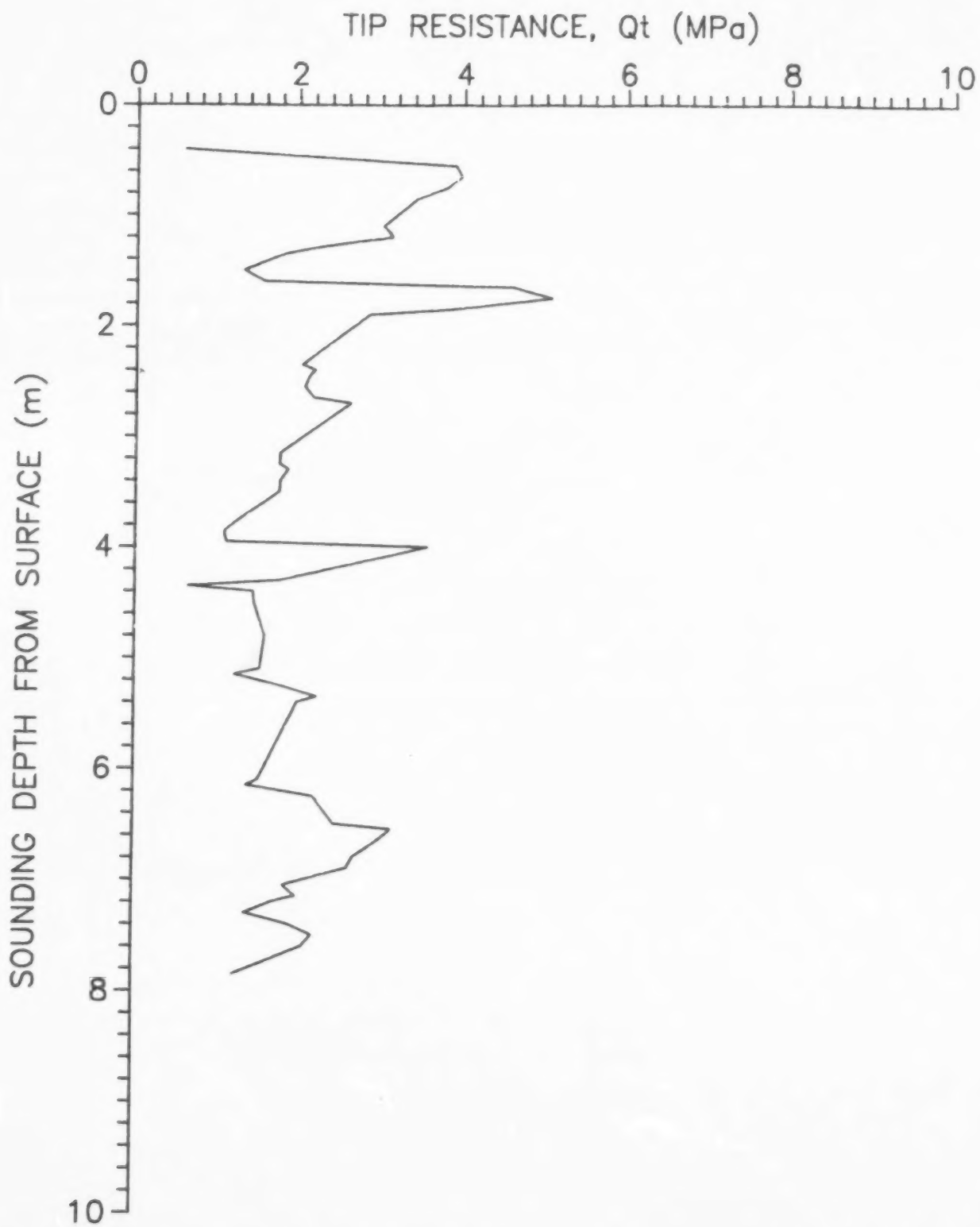
(3+74)



TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 20 ft O/C
Qt CORRECTED FOR PWP (22+00)



TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 9.5ft SOUTH PC2 (2+59.5)
Qt CORRECTED FOR PWP



TIP RESISTANCE MEASURED BY PIEZOCONE
AT DECEW DYKE 7.75ft SOUTH PC4
Qt CORRECTED FOR PWP (7+57.75)

APPENDIX C

HOLE NO.	PROJECT	REMARKS
BH-1	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
	DEPTH - ft 3.00 4.50 50 mm Shelby										
1	Very stiff, damp brown, mottled,		24.3								
	slightly blocky, clayey silt with little fine sand,										
	trace of organics.										
	DEPTH - ft 4.50 6.00 SPT N = 13										
2	Very stiff, damp, brown, slightly blocky, clayey		23								
	silt, trace of fine sand.										
	DEPTH - ft 6.00 7.50 50 mm Shelby										
3	Stiff, damp, brown, mottled, slightly blocky,		25.6								
	clayey silt, trace of find sand.										
	DEPTH - ft 7.50 9.00 SPT N = 14										
4	Stiff, damp, brown, clayey silt with trace of fine	1998	26.9								
	sand.										
	DEPTH - ft 9.00 10.50 50 mm Shelby										
5	Stiff, damp, brown, mottled, slightly blocky, clayey		26.6			56	42	43	22	21	22
	silt with trace of fine sand.										

HOLE NO.	PROJECT	REMARKS
BH-1	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
	DEPTH - ft 10.50 12.00 SPT N = 14										
6	Stiff, damp, brown, mottled, clayey silt, trace of		26								
	fine sand and organics (decayed roots).										
	DEPTH - ft 12.00 13.50 50 mm Shelby										
7	Firm, damp, brown, clayey silt, trace of fine		26								
	sand.										
	DEPTH - ft 13.50 15.00 SPT N = 15										
8	Very stiff, damp, brown, fissured, clayey silt with		24.8								
	traces of organic and fine sand.										
	DEPTH - ft 15.00 16.50 50 mm Shelby										
9	Stiff, damp, brown, slightly mottled, clayey silt		20.7	23	26	54	41	44	21	23	36
	with traces of fine sand and gravel.										
	DEPTH - ft 16.50 18.00 SPT N = 13										
10	Stiff, damp, brown-grey, silty clay, traces of	1979	27.4								
	fine sand and organics.										

HOLE NO.	PROJECT	REMARKS
BH-1	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
11	DEPTH - ft 18.00 19.50 — 50 mm Shelby										
	Stiff, damp, grey brown, slightly fissured, clayey		27.2								
	silt with traces of fine sand and organics										
12	DEPTH - ft 19.50 21.00 — SPT N = 21										
	Very stiff, damp, brown-grey, clayey silt with		22.8			52	42	41	21	20	23
	traces of fine sand and organics.										
13	DEPTH - ft 21.00 22.50 — 50 mm Shelby										
	Very dense, moist grey-brown, silt with some clay,		16.6								
	little fine to coarse sand to fine gravel.										
14	DEPTH - ft 22.50 24.00 — SPT N = 75										
	Very dense, moist, brown silt with little fine		12.5								
	sand and fine gravel (till like), odd piece of coarse gravel.										
	DEPTH - ft										

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HOLE NO.	PROJECT	REMARKS
BH-3	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS		PART. SIZE		ATTERBERG LIMITS			
				C' kPa	PHI' DEG.	% CL	% SLT	LL	PL	PI	SHRINK. LIMIT
1	DEPTH - ft 3.00 4.50 SPT N = 14										
	Compact, moist, to wet, grey, silty fine to coarse		15.2								
	sand and gravel.										
2	DEPTH - ft 4.50 6.00 SPT N = 26										
	Sample dried out, compact, grey, silty, fine to		0.7								
	coarse sand to gravel.										
3	DEPTH - ft 6.00 7.20 SPT N = 65										
	Very dense, wet, grey, fine to coarse gravel with		17.7			3	7	-	-	-	
	some fine to coarse sand with trace of silt.										
4	DEPTH - ft 7.50 9.00 SPT N = 28										
	Hard, damp, brown, mottled, clayey silt with trace of	2067	21.1								
	fine sand.										
5	DEPTH - ft 9.0 10.50 SPT N = 37										
	Hard, damp, brown, mottled, clayey silt with trace		22								
	of fine sand.										

HOLE NO.	PROJECT	REMARKS
BH-3	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
6	DEPTH - ft 10.50 | 12.00 SPT N = 29										
	Hard, damp, brown, slightly mottled, silty clay with		20			54	41	41	20	21	22
	trace of fine to coarse sand.										
7	DEPTH - ft 12.00 | 13.50 SPT N = 50										
	Hard, damp, brown, clayey silt with trace of fine		18.2								
	sand.										
8	DEPTH - ft 13.50 | 15.00 SPT N = 24										
	Very stiff, damp, brown, slightly mottled, clayey		20.8								
	silt.										
9	DEPTH - ft 15.00 | 16.50 SPT N =										
	Stiff, damp, brown, slightly mottled, clayey silt		20.7								
	with trace of fine sand.										
10	DEPTH - ft 16.50 | 18.00 SPT N = 21										
	Compact, damp, brown, silt with some clay and		18.9			30	58	23	14	9	23
	fine to coarse sand.										

HOLE NO. BH-3	PROJECT DeCew Dyke	REMARKS

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
	DEPTH - ft 18.00 19.50 SPT N = 32										
11	Dense, moist, grey, silt with little clay and fine		13.9								
	to coarse sand.										
	DEPTH - ft 19.50 21.00 SPT N = 50										
12	Dense to very dense, moist, grey, silt with little		13.7								
	clay and fine to coarse sand, some fine gravel (till-like).										
	DEPTH - ft 21.00 22.30 SPT N = 84										
13	Very dense, moist, grey, silt with little clay	2288	13								
	and fine to coarse sand, trace of fine gravel (till-like).										
	DEPTH - ft 22.50 23.80 SPT N = 76										
14	Very dense, moist, grey, silt with some fine to		11.6								
	coarse sand, little clay and fine gravel (till-like).										
	DEPTH - ft										

HOLE NO.	PROJECT	REMARKS
BH-4	DeCew Dyke	

SAMP NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS		PART. SIZE		ATTERBERG LIMITS			
				C' kPa	PHI' DEG.	% CL	% SLT	LL	PL	PI	SHRINK. LIMIT
1	DEPTH - ft 3.00 4.50 SPT N = 8										
	Stiff, damp, brown, clayey silt, trace of fine		21.4								
	sand.										
2	DEPTH - ft 4.50 6.00 SPT N = 11										
	Stiff, damp, brown, clayey silt, trace of fine		23.2								
	sand.										
3	DEPTH - ft 6.00 7.50 SPT N = 11										
	Stiff, damp, brown, clayey silt with traces of fine		19.1								
	to coarse sand.										
4	DEPTH - ft 7.50 9.00 SPT N = 24										
	Stiff, damp, brown, silty clay, trace of fine	2096	21.4			54	41	37	18	19	20
	sand.										
5	DEPTH - ft 9.00 10.50 SPT N = 10										
	Stiff, damp, brown, clayey silt with traces of fine		22.5								
	to coarse sand.										

HOLE NO.	PROJECT	REMARKS
BH-4	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	PL	PI	SHRINK. LIMIT
6	DEPTH - ft 10.50 | 12.00 SPT N = 17										
	Stiff, damp, brown clayey silt, trace of fine sand.		20.9								
7	DEPTH - ft 12.00 | 13.50 SPT N = 13										
	Stiff, damp, brown, clayey silt, trace of fine sand.		23.3								
8	DEPTH - ft 13.50 | 15.00 SPT N = 23										
	Stiff, damp, grey-brown clayey silt with little fine		17.7								
	to coarse sand and gravel (till-like).										
9	DEPTH - ft 15.00 | 16.50 SPT N = 13										
	Stiff, damp, grey brown, clayey silt, trace of fine		21								
	sand.										
10	DEPTH - ft 16.50 | 18.00 SPT N = 44										
	Hard, damp, brown, clayey silt with trace of fine	2102	18.5								
	sand.										

HOLE NO.	PROJECT	REMARKS
BH-4A	DeCew Dyke	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	PL	PI	SHRINK. LIMIT
	DEPTH - ft 2" Shelby										
1A	5.00 6.50										
	9" recovery. Firm, damp, brown, slightly blocky		24.4		DEPTH 5'-1" - 5'-5"						
	clayey silt with trace of dine sand.		23.8		DEPTH 5'-5" - 5'-9"						
	DEPTH - ft 2" Shelby										
2A	6.50 8.00										
	6.5" - 6.10" hollow. 6.10" - 7.5" firm, damp	2132	26.1		DEPTH 6'-5" - 6'-10"			(Hollow Sample)			
	brown clayey silt, trace of fine sand and gravel.		23.6 23.2		DEPTH 6'-10" - 7'-2" DEPTH 7'-2" - 7'-5"						
	DEPTH - ft 2" Shelby										
3A	8.00 9.50										
	9" recovery. Firm, damp, brown, mottled clayey silt,		21.2		DEPTH 8.0' - 8'-4"						
	traces of fine sand and gravel.		21.0 17.2		DEPTH 8'-4" - 8'-8" DEPTH 8'-8" - 8'-9"						
	DEPTH - ft 2" Shelby										
4A	9.50 11.00										
	NO SAMPLE										
	DEPTH - ft										

HOLE NO.	PROJECT	REMARKS
BH-2	DECEW DYKE	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	PL	PI	SHRINK. LIMIT
1	DEPTH - ft 3.00 4.50 SPT 1 N = 22										
	Compact, moist, brown (tan), silt with some		10.4			50	46	39	18	21	26
	sand.										
2	DEPTH - ft 4.50 6.00 50 mm Shelby										
	Very stiff, damp, brown, clayey silt with traces		22								
	of fine sand and gravel.										
3	DEPTH - ft 6.00 7.50 SPT1 N = 23										
	Very stiff, damp, brown, clayey silt, slightly	1996	17								
	blocky trace of fine sand.										
4	DEPTH - ft 7.50 9.00 50 mm Shelby										
	Hard, damp, brown, mottled, clayey silt with		19.6								
	trace of fine sand and gravel.										
5	DEPTH - ft 9.00 10.50 SPT1 N = 65										
	Very dense, moist, brown, clayey silt with trace		14.8			35	63	30	18	12	22
	of fine sand.										

HOLE NO. BH-2	PROJECT DECEW DYKE	REMARKS

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
6	DEPTH - ft 10.50 12.00 SPT1 N = 14										
	Very stiff, damp, brown, silt with some clay, trace		18.2								
	of fine sand.										
7	DEPTH - ft 12.00 13.50 SPT 1 N = 18										
	Stiff, damp, brown, slightly fissured, clayey silt,		22.8								
	trace of fine sand and organics.										
8	DEPTH - ft 13.50 15.00 50 mm Shelby										
	Firm to stiff damp, brown, clayey silt, trace of		22								
	fine sand.										
9	DEPTH - ft 15.00 16.50 SPT1 N = 22										
	Stiff, damp, brown, slightly fissured, clayey silt		23			47	49	39	21	18	23
	with little fine sand.										
10	DEPTH - ft 16.50 18.00 SPT1 N = 18										
	Stiff, damp, grey, fissured, clayey silt with	1948	24.2								
	little fine sand, trace of organics.										

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HOLE NO. BH-2	PROJECT DECEW DYKE	REMARKS

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
11	DEPTH - ft 18.00 | 19.50 — 50 mm Shelby										
	Very stiff, damp, grey-brown, mottled, clayey silt,		25.4	24	24						
	trace of dine sand.										
12	DEPTH - ft 19.50 | 21.00 — SPT 1 N = 46										
	Hard, damp, slightly reddish brown, fissured,		20.7								
	clayey silt with trace of fine sand.										
13	DEPTH - ft 21.00 | 22.50 — SPT1 N = 80										
	Hard, damp, brown, fissured (discolouration), clayey		20.2								
	silt with trace of fine sand.										
14	DEPTH - ft 22.50 | 24.00 — SPT1 N = 46										
	Hard, damp, brown, slightly fissured, clayey silt		19								
	with traces of fine sand and organic matters.										
15	DEPTH - ft 24.00 | 25.50 — SPT 1 N = 88										
	Hard, damp, brown, slightly fissured, clayey silt		19.5								
	with traces of fine sand to fine gravel.										

HOLE NO. BH-2	PROJECT DECEW DYKE	REMARKS

SAMP NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
	DEPTH - ft 25.50 27.00 SPT 1 N = 30										
16	Hard, damp, brown, slightly fissured, clayey silt		21								
	with traces of fine to coarse sand.										
	DEPTH - ft 27.00 28.50 SPT 1 N = 39										
17	Hard, damp, brown, slightly fissured, clayey		21.5								
	silt with trace of fine to coarse sand.										
	DEPTH - ft 28.50 30.00 SPT 1 N = 35										
18	Hard, damp, brown, slightly fissured, clayey		22.5								
	silt with trace of fine sand.										
	DEPTH - ft 30.00 31.50 SPT 1 N = 58										
19	Hard, damp, brown, slightly fissured, clayey silt	2245	14.9								
	with trace to little fine sand.										
	DEPTH - ft 31.50 33.00 SPT 1 N = 38										
20	Hard, damp, brown, slightly fissured, silt with		25.8								
	some clay and trace of fine sand.										

HOLE NO.	PROJECT	REMARKS
BH-2	DECEW DYKE	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	ATTERBERG LIMITS SHRINK. LIMIT
	DEPTH - ft 33.00 | 34.50 SPT 1 N = 43										
21	Hard, damp, grey, brown, fissured, clayey silt		24.8								
	with traces of fine sand and organic matters.										
	DEPTH - ft 34.50 | 36.00 SPT 1 N = 26										
22	Hard, damp, brown, slightly fissured, clayey silt		26.5								
	with traces of fine to coarse sand.										
	DEPTH - ft 36.00 | 37.50 SPT 1 N = 31										
23	Hard, damp, reddish brown, slightly fissured, silt		20.6								
	with some clay, trace of fine sand.										
	DEPTH - ft 37.50 | 39.00 SPT 1 N = 27										
24	Very stiff, damp, brown, clayey silt.		24.2								
	DEPTH - ft 39.00 | 40.50 SPT 1 N = 40										
25	Very stiff, damp, brown, slightly mottled clayey		23.1								
	silt.										

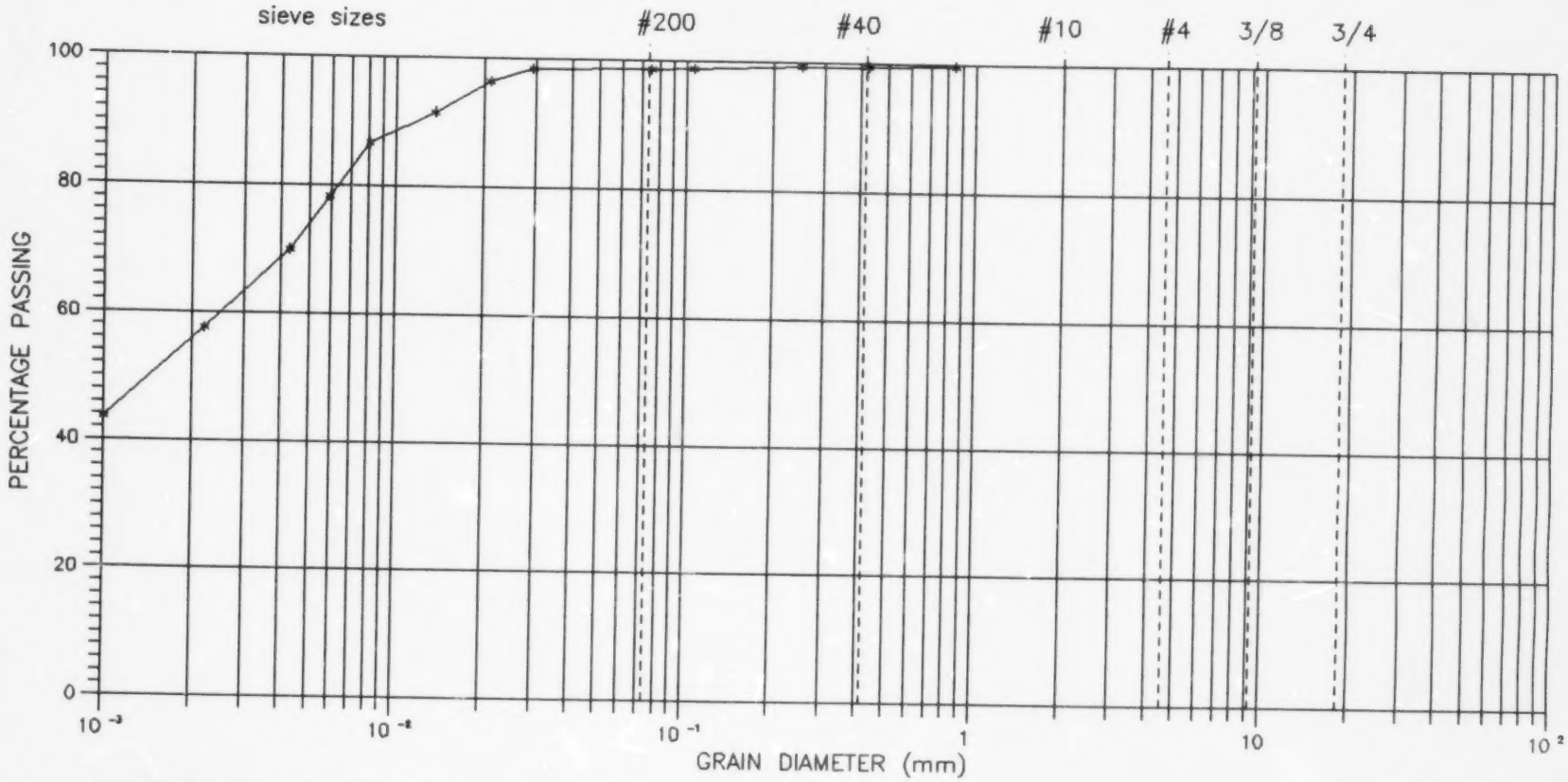
HOLE NO.	PROJECT	REMARKS
BH-2	DECEW DYKE	

SAMP NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS C' kPa	SHEAR STRENGTH PARAMETERS PHI' DEG.	PART. SIZE % CL	PART. SIZE % SLT	ATTERBERG LIMITS LL	PL	PI	SHRINK. LIMIT
	DEPTH - ft 40.50 | 42.00 SPT 1 N = 24										
26	Very stiff, damp, brown, slightly fissured, clayey		27.3								
	silt, trace of fine sand.										
	DEPTH - ft 42.00 | 43.50 SPT 1 N = 38										
27	Very stiff, damp, brown, slightly fissured, clayey		18.5			37	60	29	19	10	23
	silt with trace of fine sand.										
	DEPTH - ft 43.50 | 45.00 SPT 1 N = 33										
28	Hard, damp, brown, clayey silt.		20.2								
	DEPTH - ft 45.00 | 46.50 SPT 1 N = 42										
29	Hard, damp, grey-brown clayey silt.		17.0								
	DEPTH - ft 46.50 | 48.00 SPT 1 N = 28										
30	Compact, damp, brown, silt with little clay, trace		18.1								
	of fine sand.										

HOLE NO.	PROJECT	REMARKS
BH-2	DECEW DYKE	

SAMP. NO.	LABORATORY SOIL CLASSIFICATION	NAT. DENS. kg/m3	NAT. M.C. % DRY WT.	SHEAR STRENGTH PARAMETERS		PART. SIZE		ATTERBERG LIMITS			
				C' kPa	PHI' DEG.	% CL	% SLT	LL	PL	PI	SHRINK. LIMIT
	DEPTH - ft 48.00 49.50 SPT 1 N = 32										
	Dense, damp, brown, silt with some clay, trace		18.2								
	of fine sand.										
	DEPTH - ft 49.50 51.00 SPT 1 N = 48										
	Dense, moist, reddish-brown, silt with little to	2321	11.6								
	some clay and fine to coarse (till-like).										
	DEPTH - ft 51.00 52.20 SPT 1 N = 95										
	Very dense, moist, brown-grey, fine to coarse		10.5								
	sandy silt with some fine to coarse gravel (till-like).										
	DEPTH - ft										
	DEPTH - ft										

MECHANICAL ANALYSIS
Decew Dyke BH-1 S-5: 9.0 ft – 10.5 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

unified soil classification

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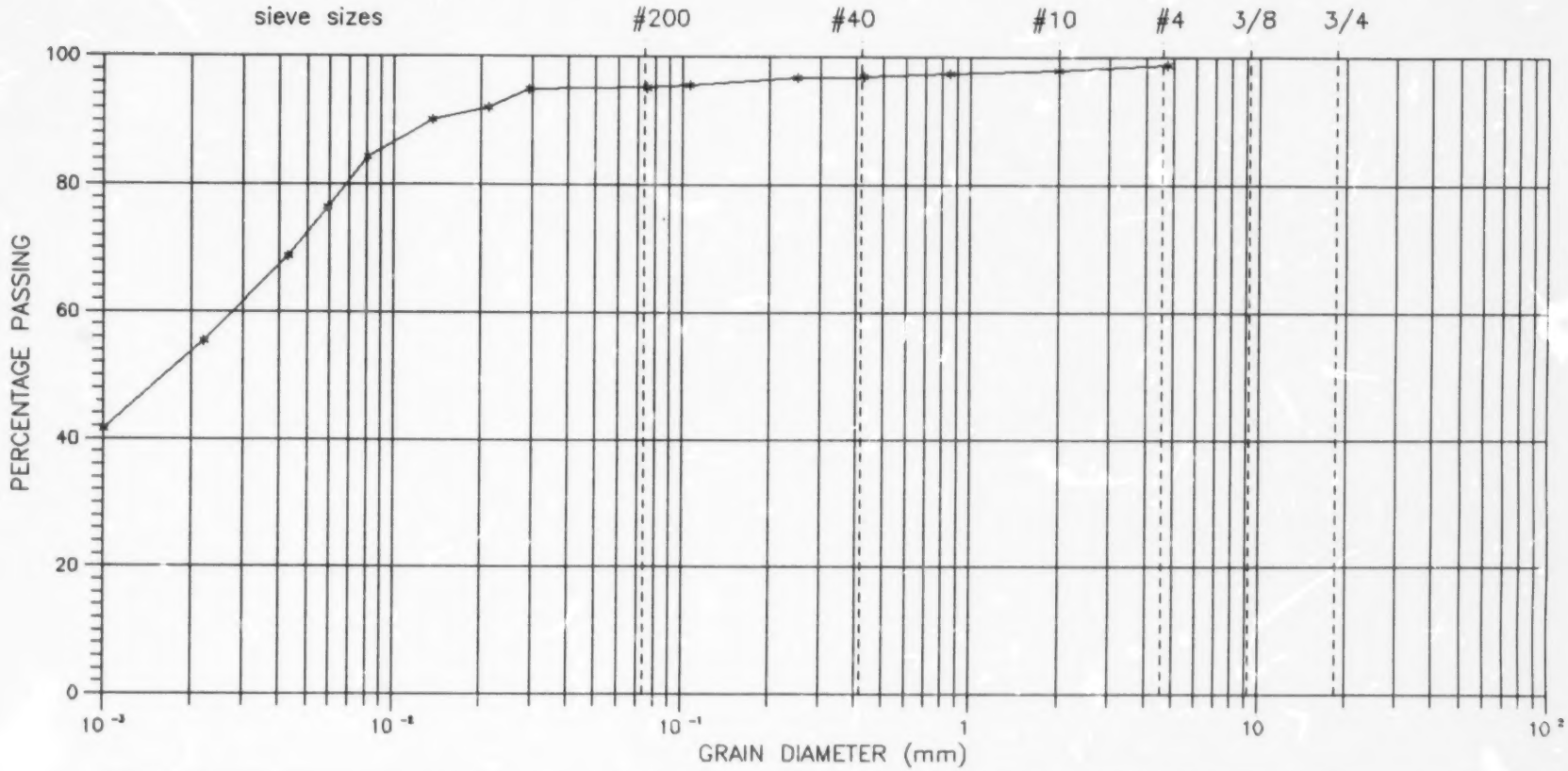
MECHANICAL ANALYSIS
Decew Dyke BH–1 S–9: 15.0 ft – 16.5 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

unified soil classification

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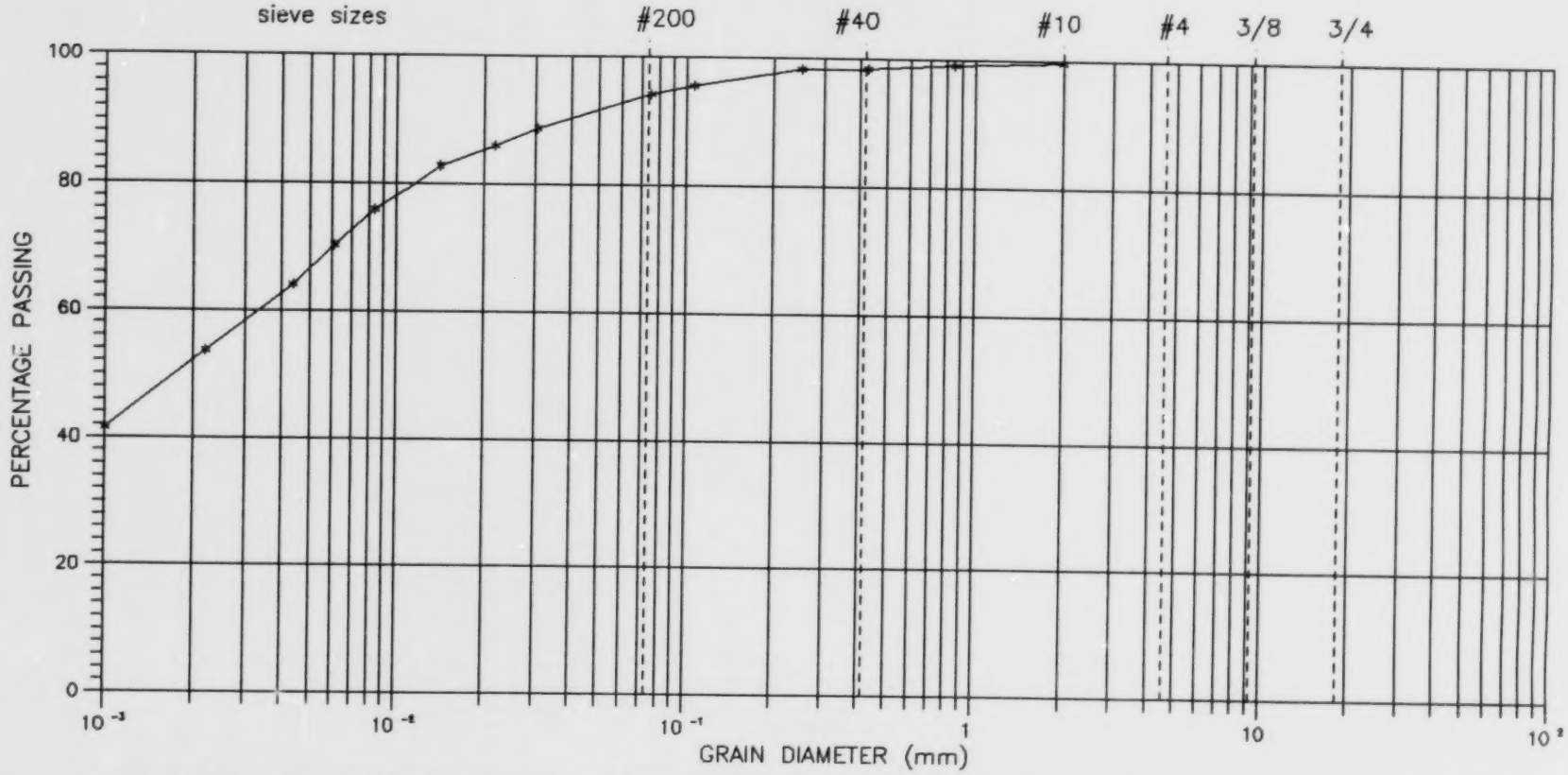
MECHANICAL ANALYSIS
Decew Dyke BH–1 S–12: 19.5 ft – 21.0 ft



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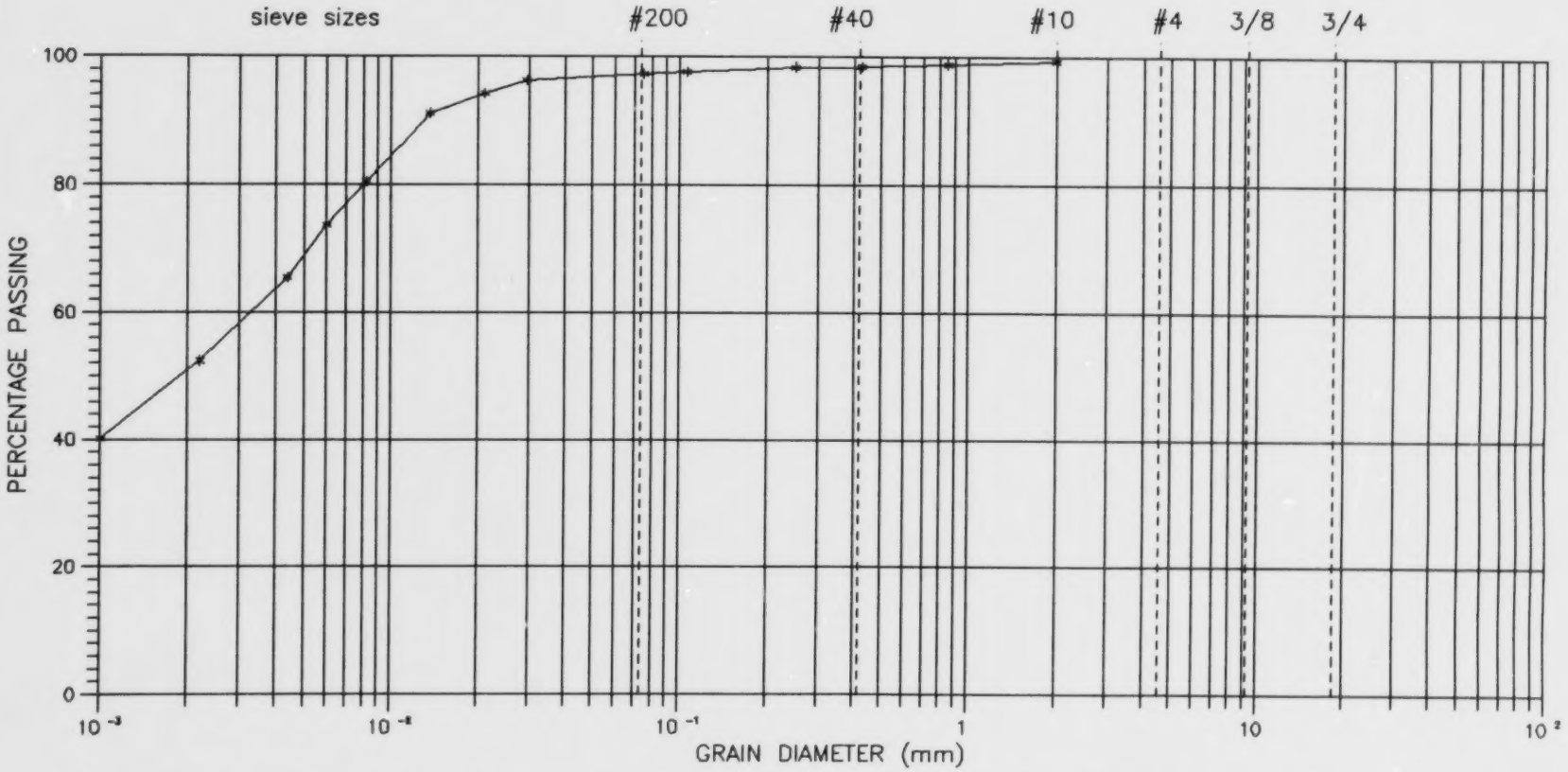
MECHANICAL ANALYSIS
Decew Dyke BH-2 S-1 : 3.0 ft - 4.5 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

unified soil classification

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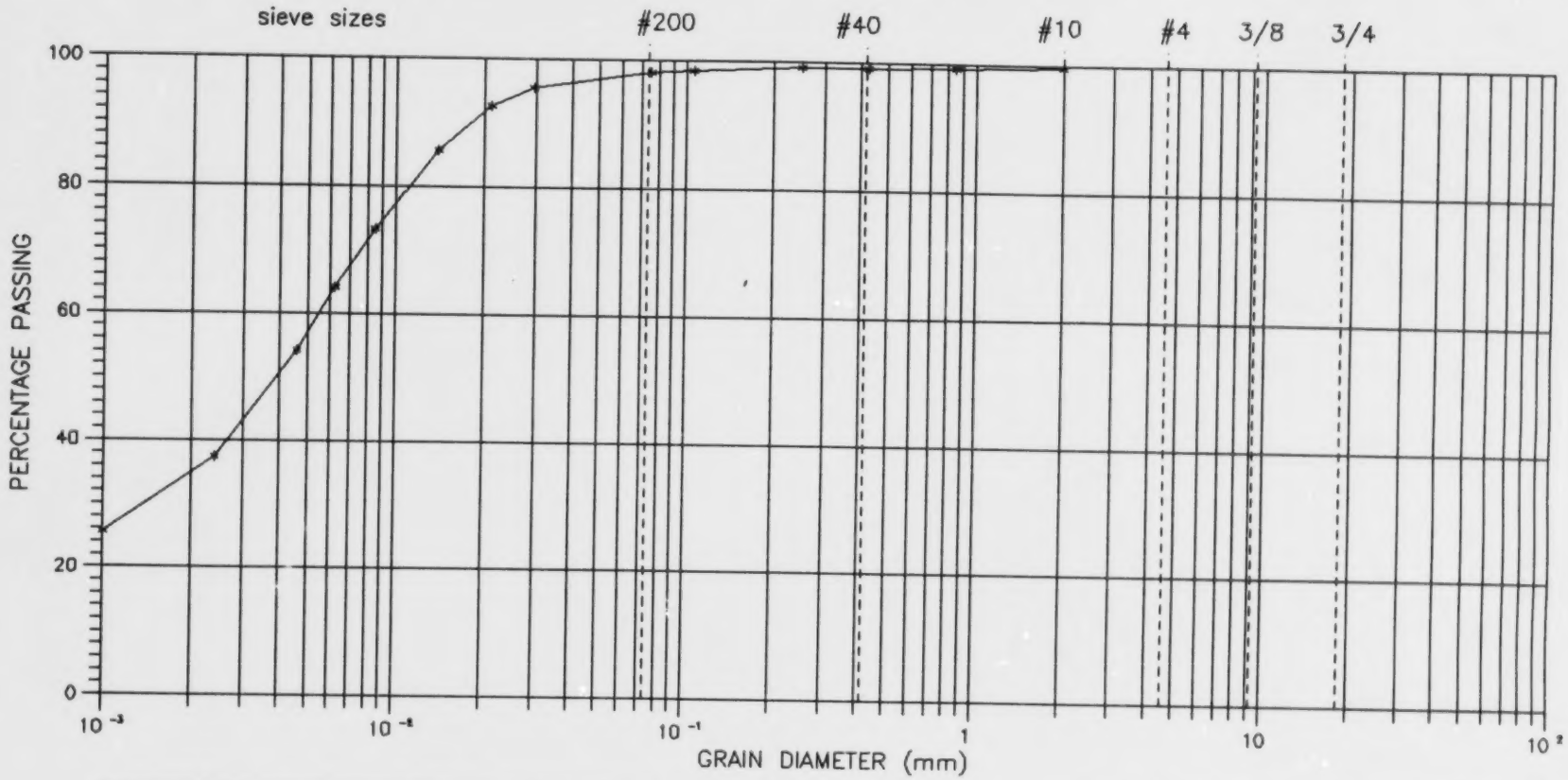
MECHANICAL ANALYSIS
Decew Dyke BH-2 S-5 : 9.0 ft - 10.5 ft



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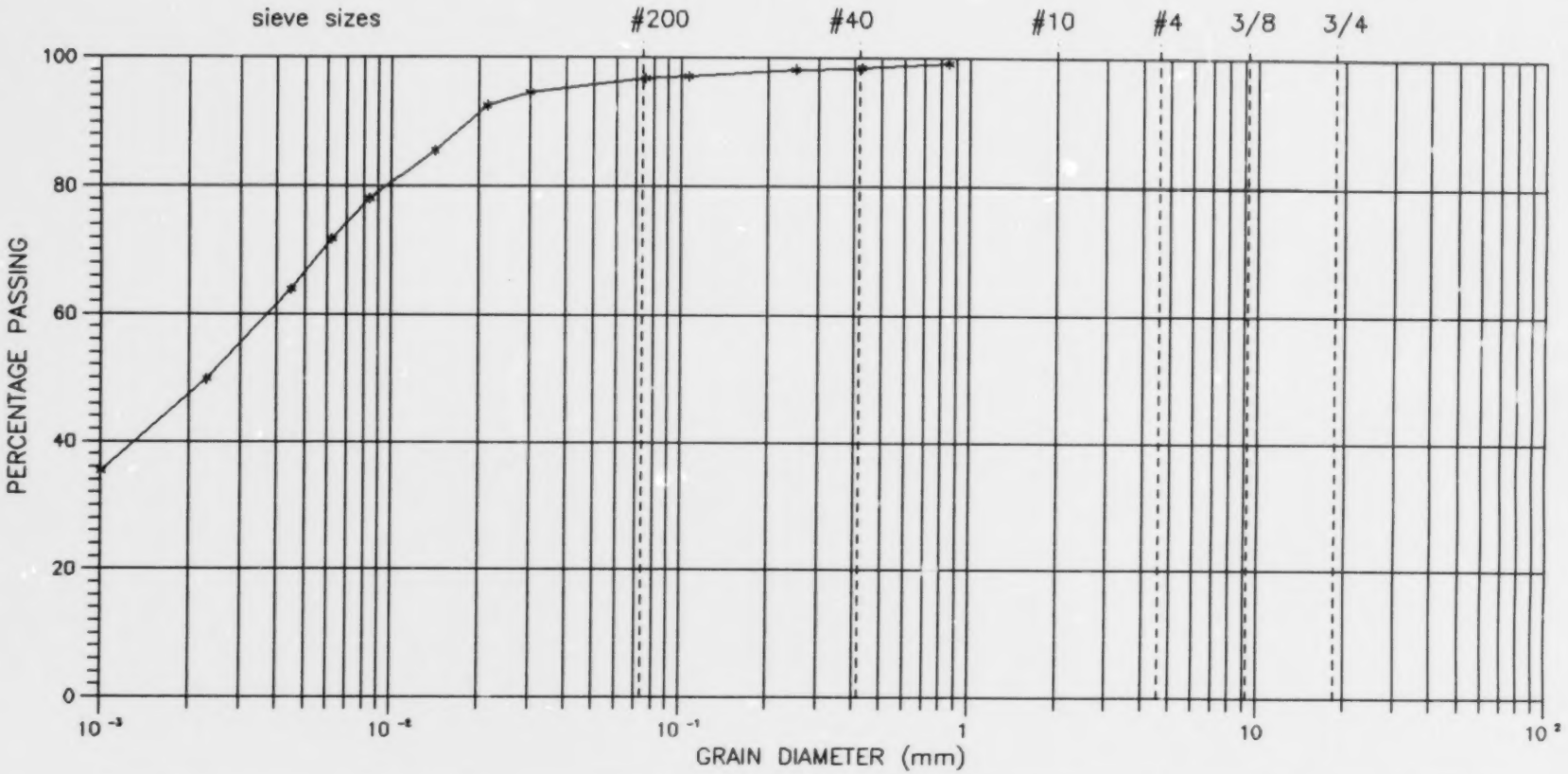
MECHANICAL ANALYSIS
Decew Dyke BH-2 S-9 : 15.0 ft - 16.5 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

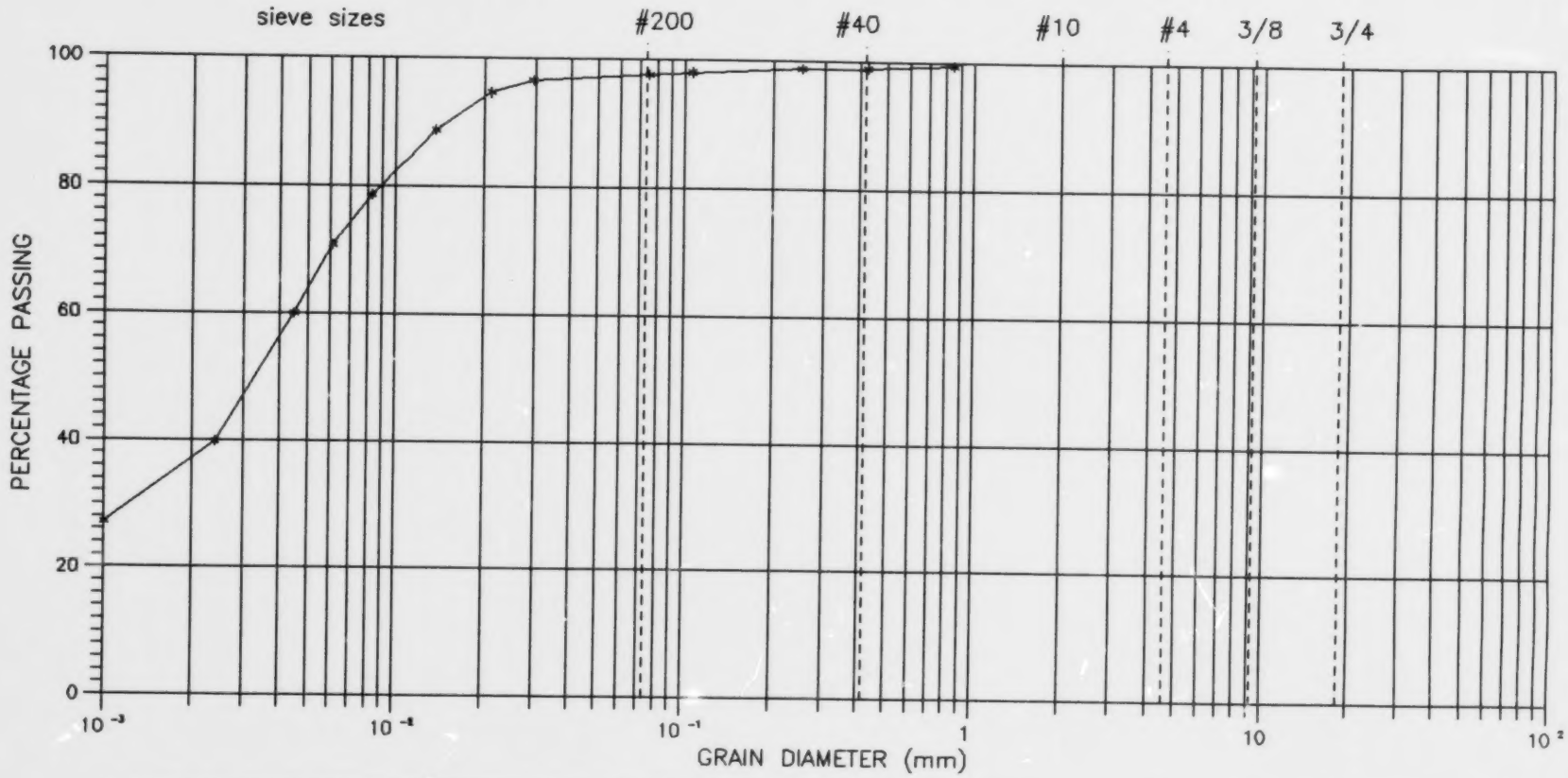
unified soil classification

111

88-7

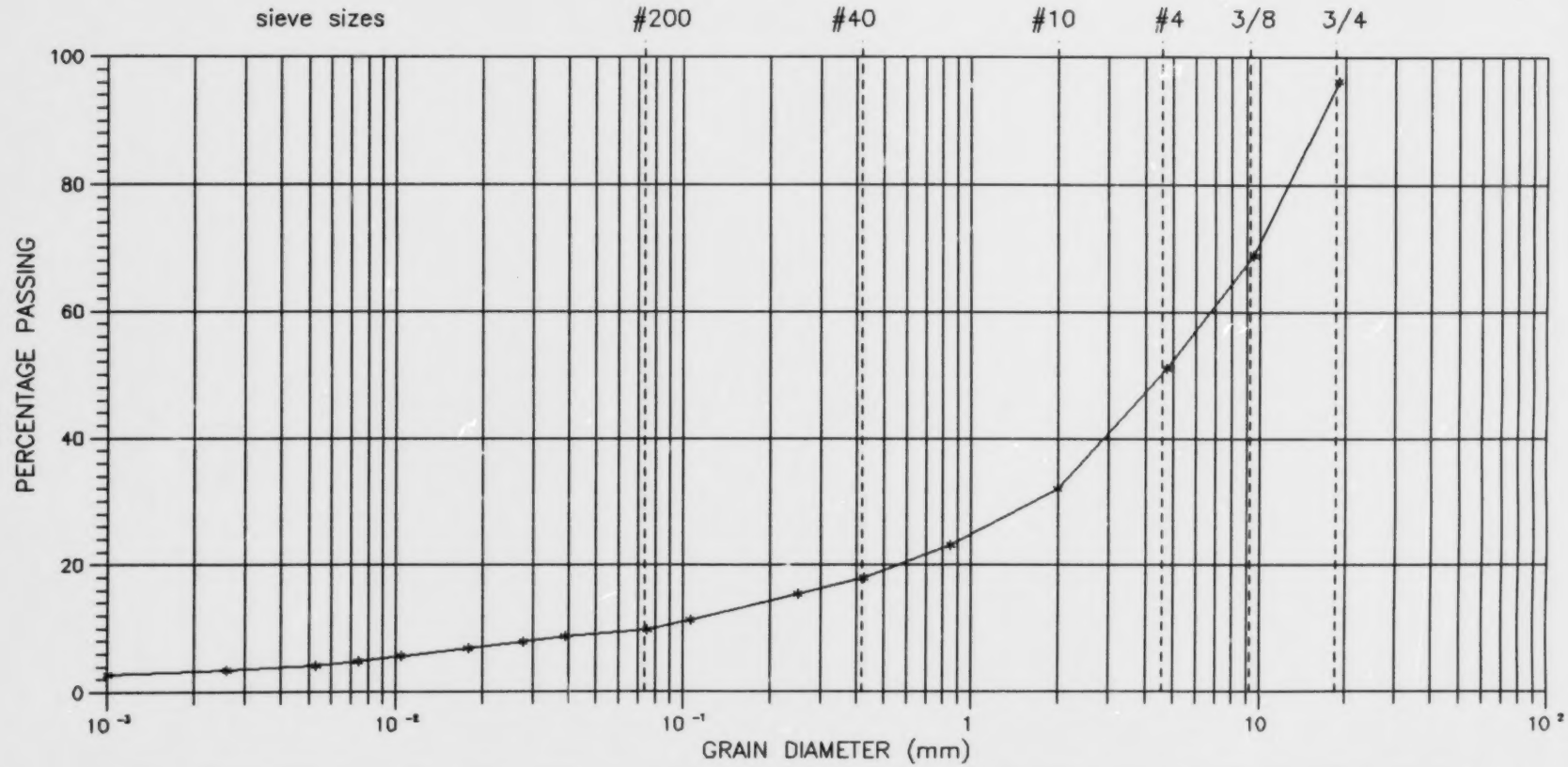
ONTARIO HYDRO
RESEARCH DIVISION

MECHANICAL ANALYSIS
Decew Dyke BH-2 S-27 : 42.0 ft – 43.5 ft



ONTARIO HYDRO
RESEARCH DIVISION

MECHANICAL ANALYSIS
Decew Dyke BH-3 S-3 : 6.0 ft - 7.2 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

unified soil classification

113

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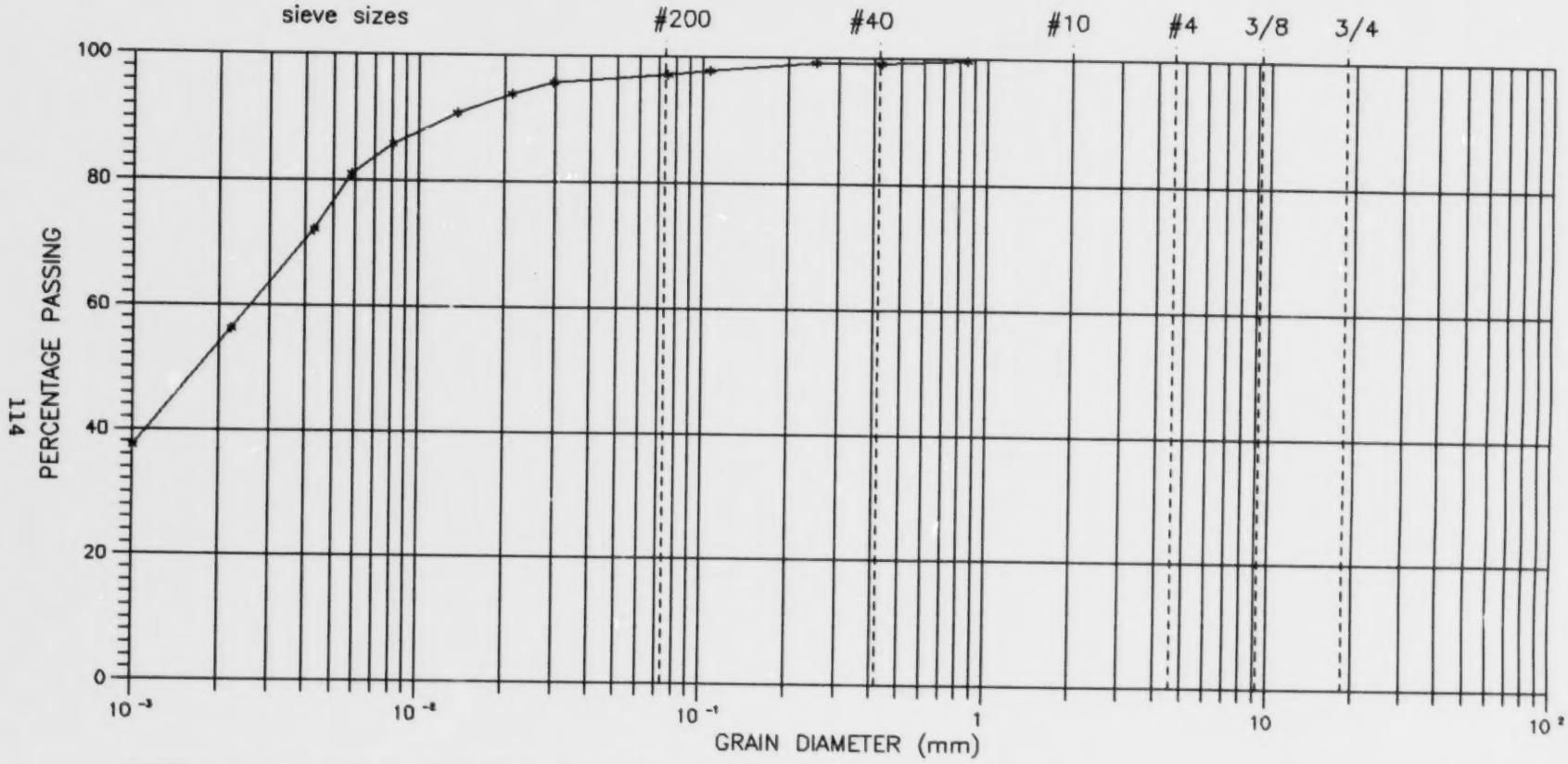
ONTARIO HYDRO
RESEARCH DIVISION

MECHANICAL ANALYSIS
Decew Dyke BH-3 S-6 : 10.5 ft – 12.0 ft



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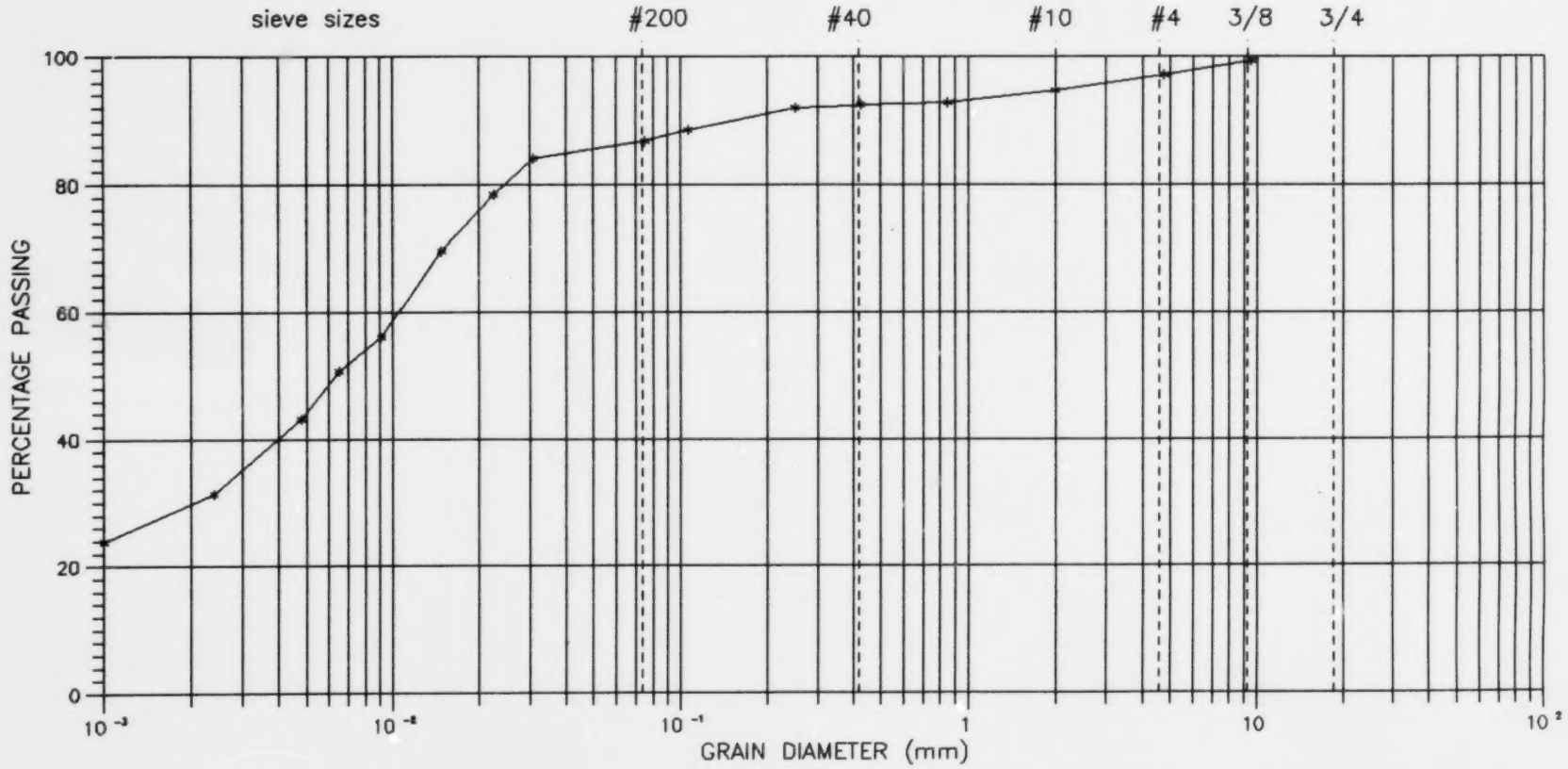
ONTARIO HYDRO
RESEARCH DIVISION

MECHANICAL ANALYSIS
Decew Dyke BH-3 S-10 : 16.5 ft – 18.0 ft



clay	to silt	sand			gravel	
		fine	medium	coarse	fine	coarse

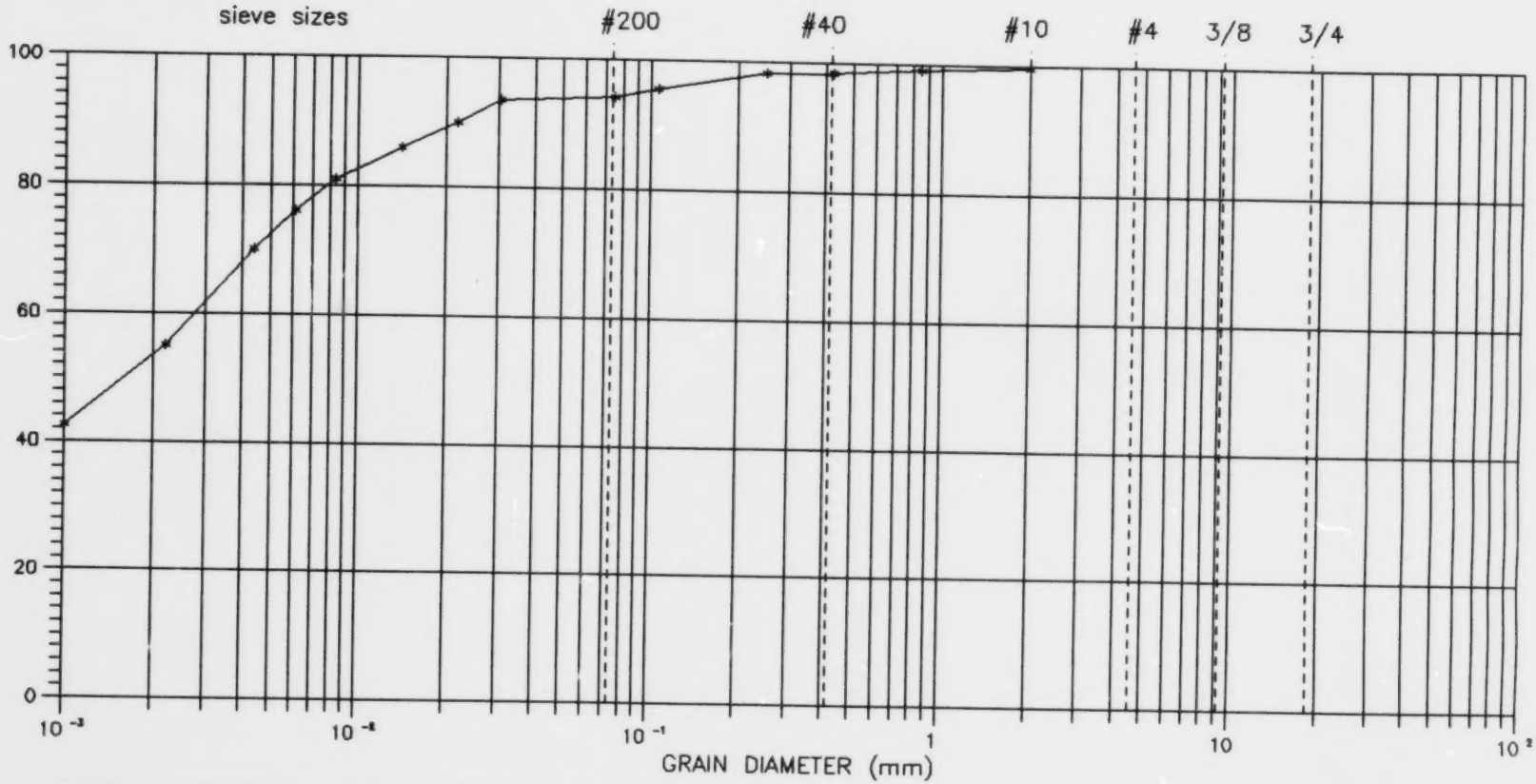
unified soil classification

ILS

88-7

ONTARIO HYDRO
RESEARCH DIVISION

MECHANICAL ANALYSIS
Decew Dyke BH-4 S-4 : 7.5 ft - 9.0 ft



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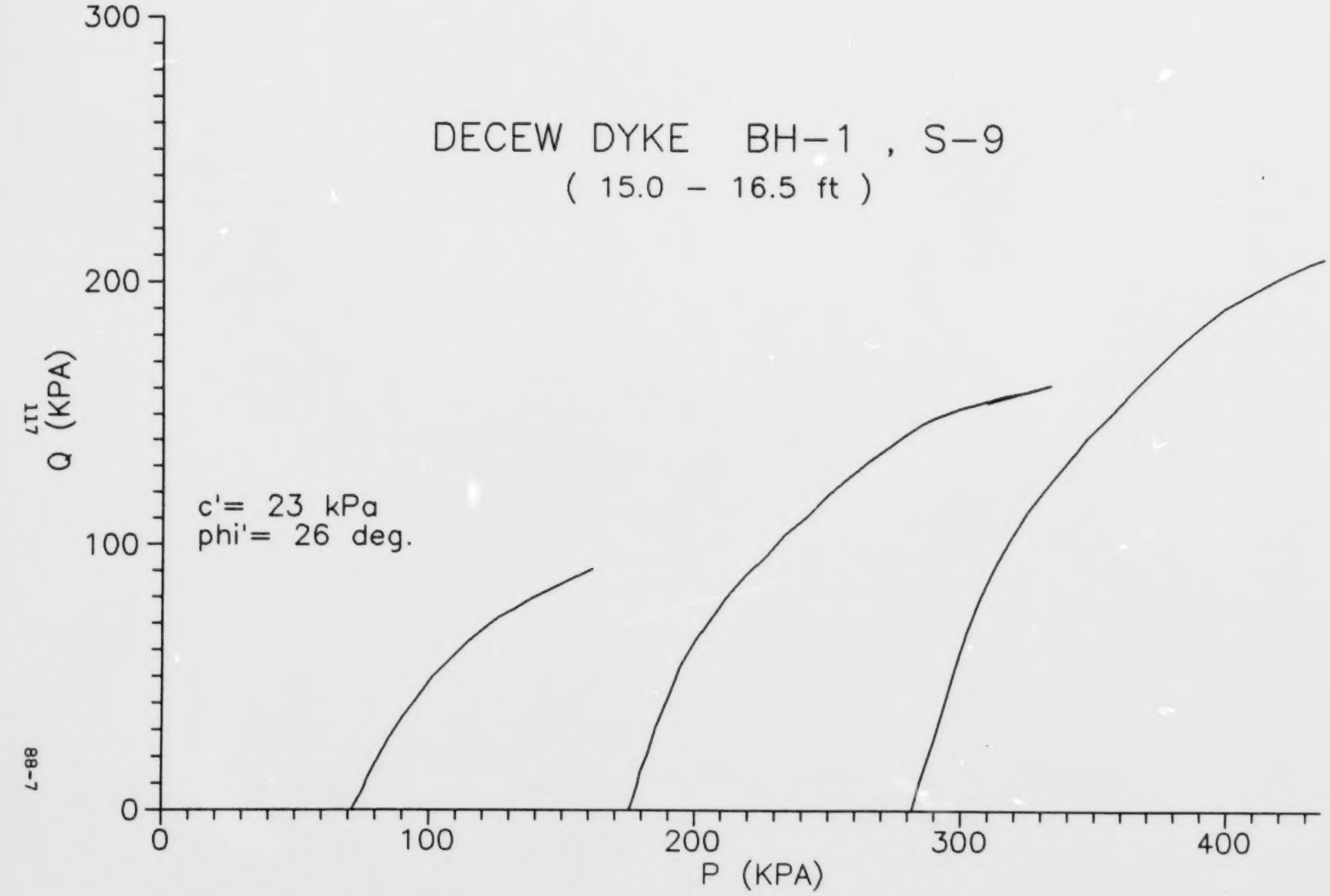
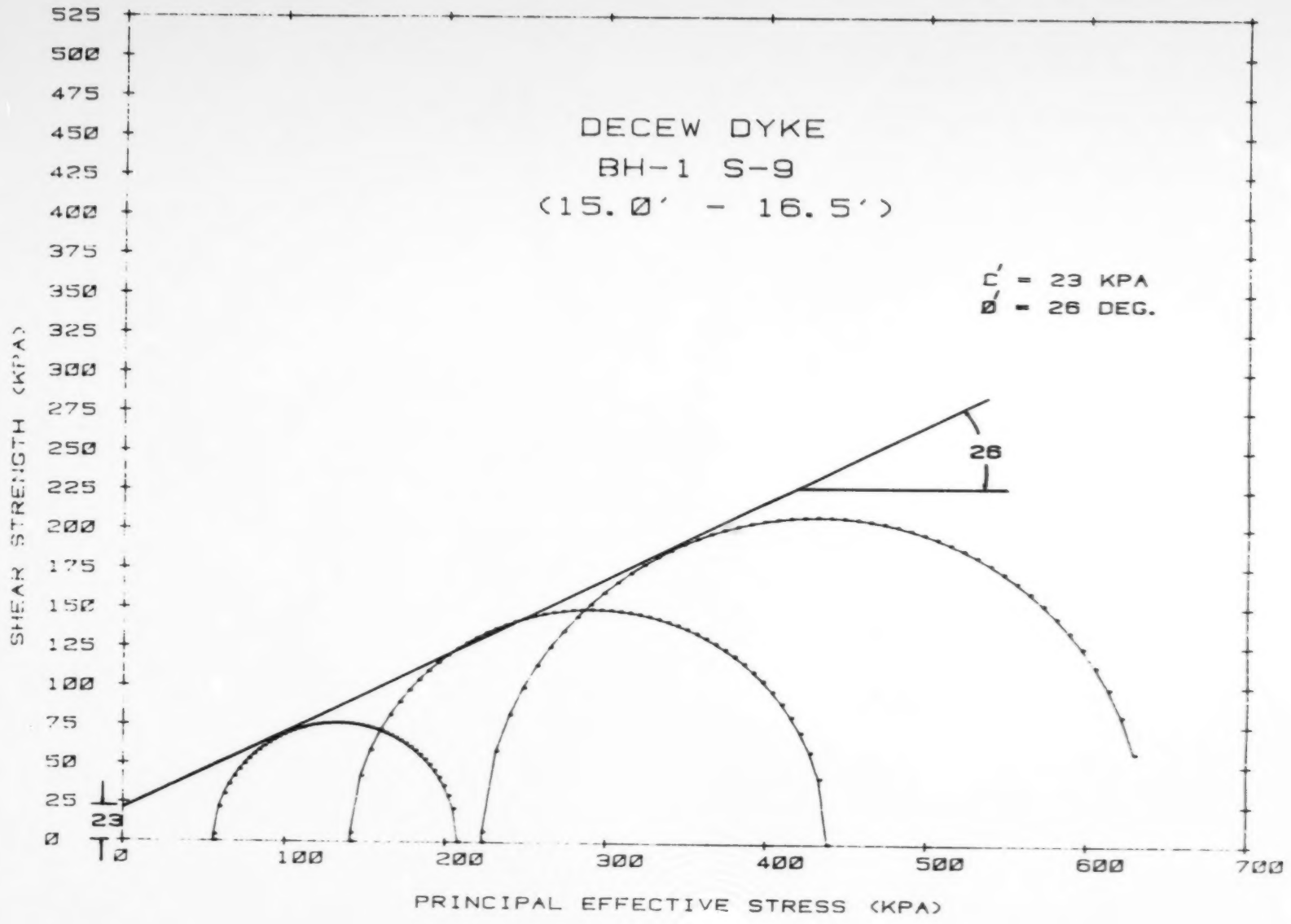
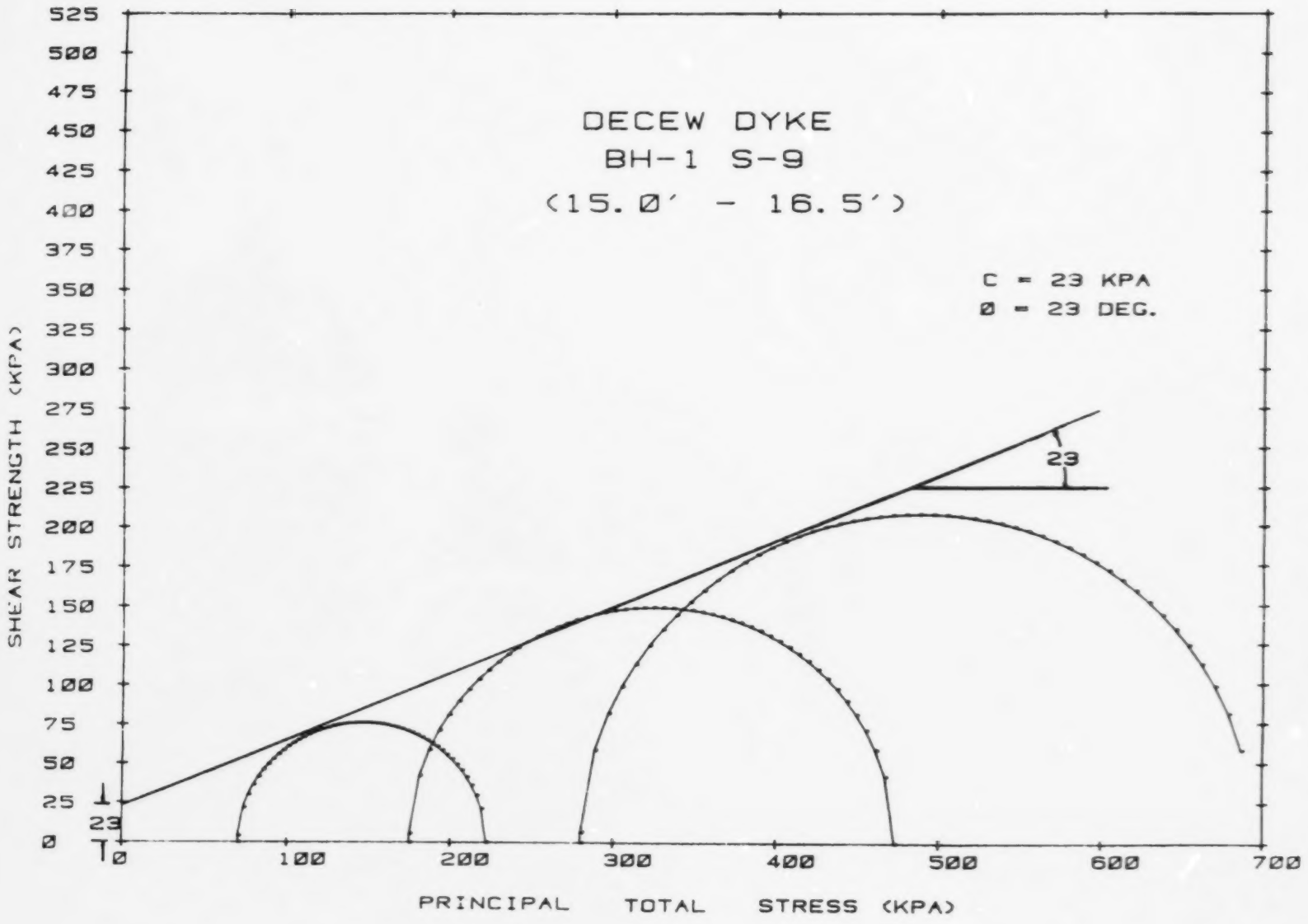
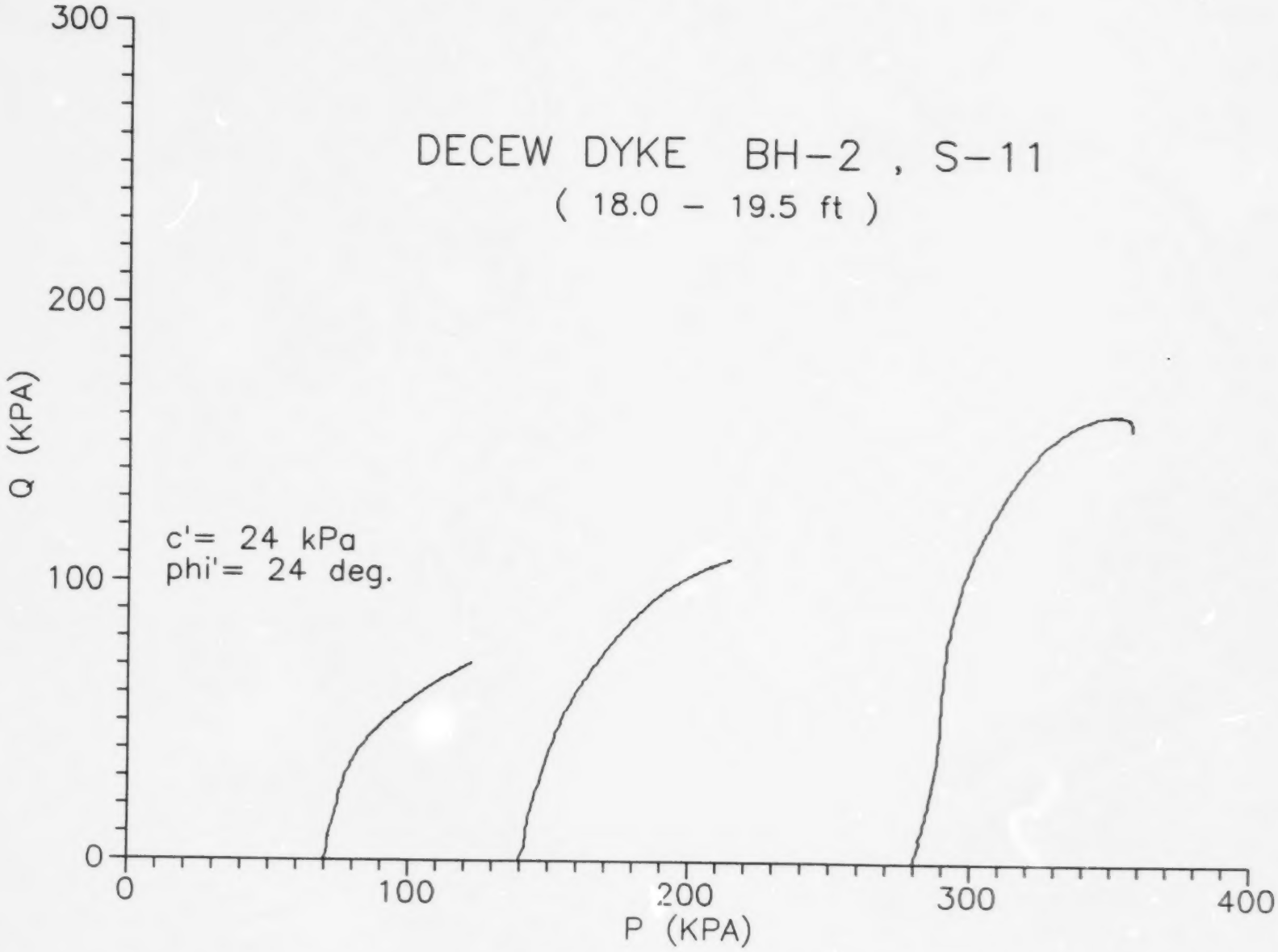
ONTARIO HYDRO
RESEARCH DIVISION

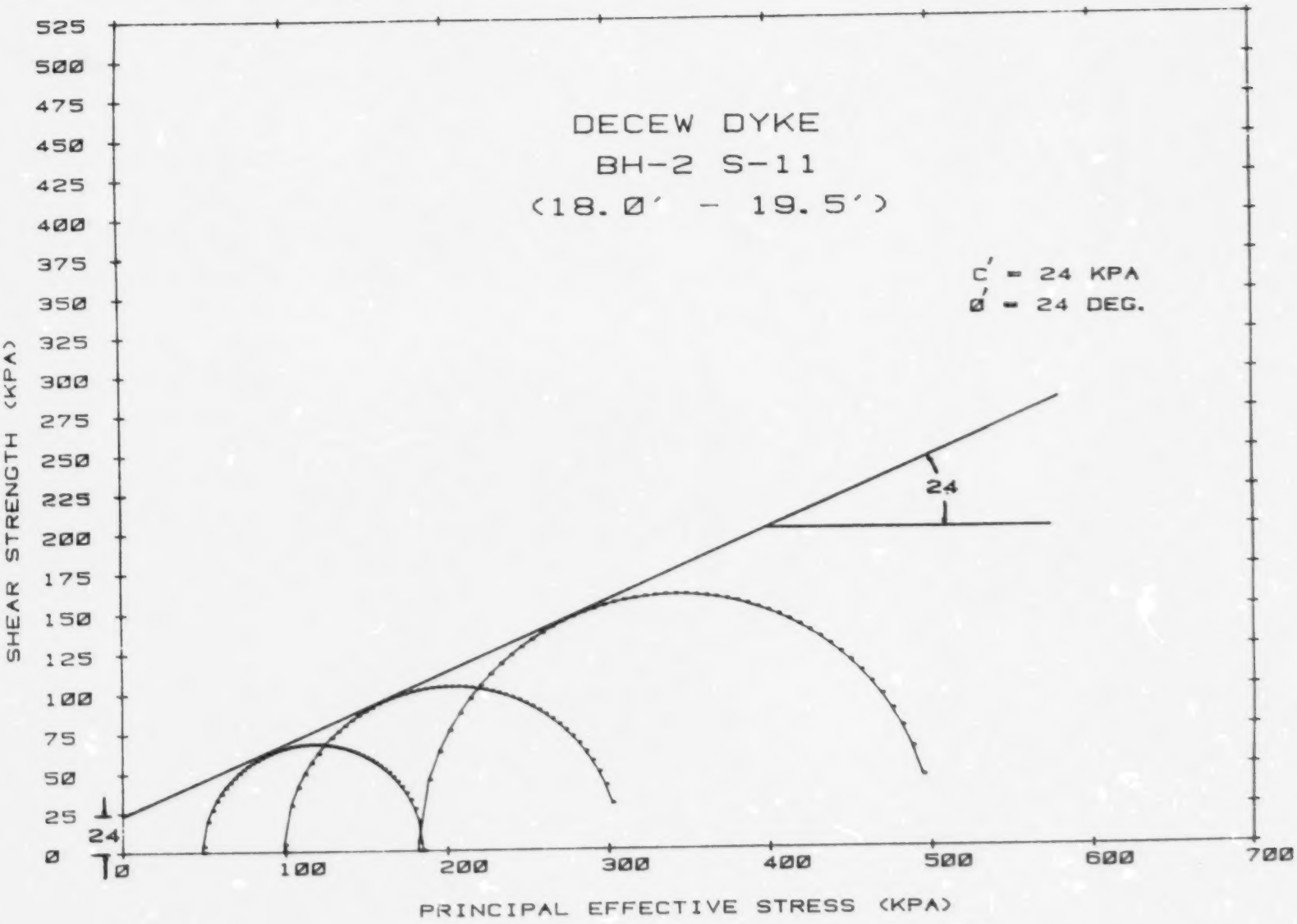

DECEW DYKE BH-1 , S-9
(15.0 - 16.5 ft)
c'= 23 kPa
phi'= 26 deg.
Q (KPA)
P (KPA)
0
100
200
300
400
88-7


DECEW DYKE
BH-1 S-9
(15.0' - 16.5')
C' = 23 KPA
Ø' = 26 DEG.
26
23
SHEAR STRENGTH (KPA)
PRINCIPAL EFFECTIVE STRESS (KPA)
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
0
100
200
300
400
500
600
700

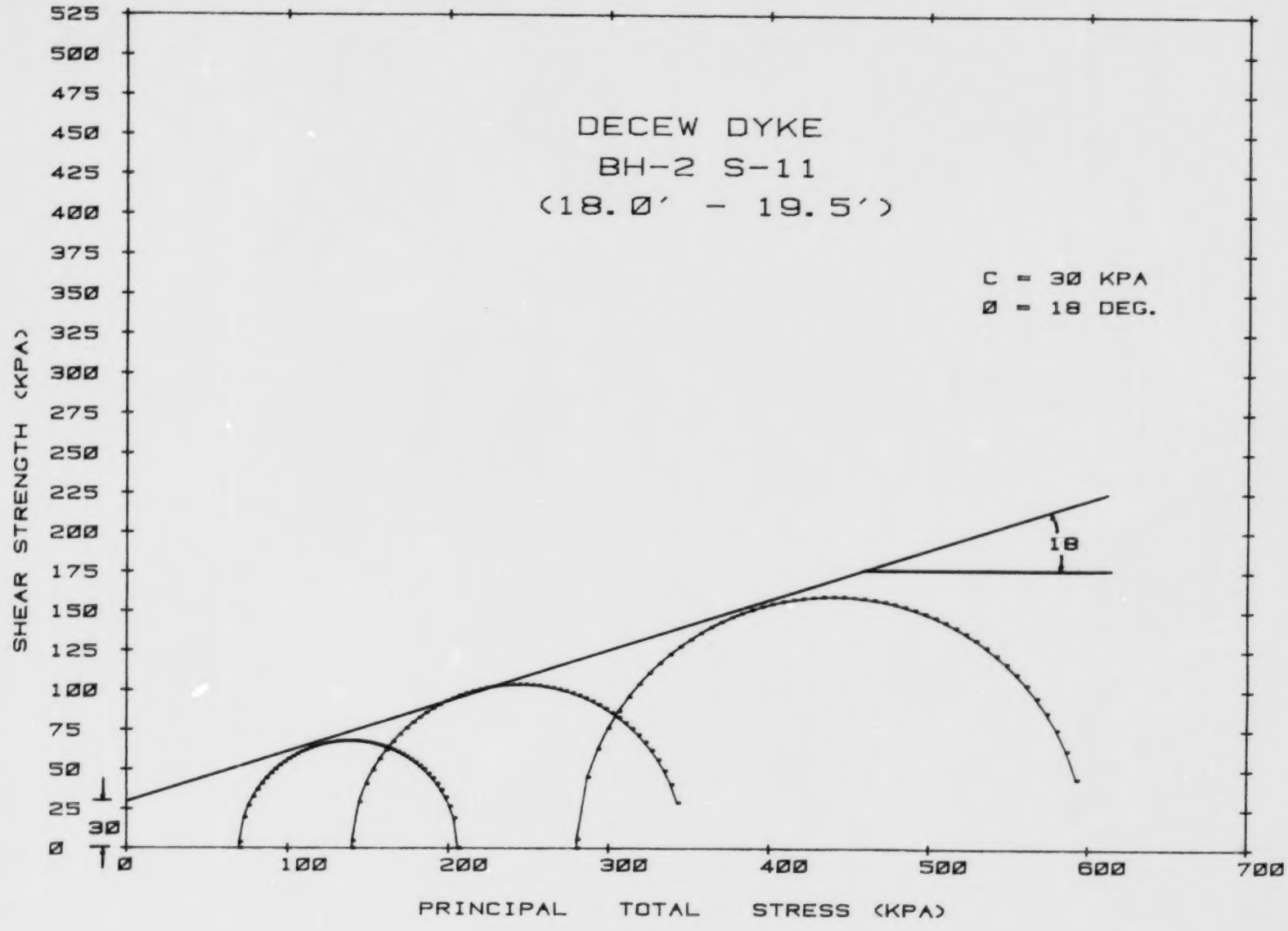
88-7 118


DECEW DYKE
BH-1 S-9
(15.0' - 16.5')
C = 23 KPA
Ø = 23 DEG.
23
23
SHEAR STRENGTH (KPA)
PRINCIPAL TOTAL STRESS (KPA)
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400
425
450
475
500
525
0
100
200
300
400
500
600
700


DECEW DYKE BH-2 , S-11
(18.0 - 19.5 ft)
c'= 24 kPa
phi'= 24 deg.
Q (KPA)
P (KPA)
0
100
200
300
400


DECEW DYKE
BH-2 S-11
(18.0' - 19.5')
c' = 24 KPA
ø' = 24 DEG.
24
24
SHEAR STRENGTH (KPA)
PRINCIPAL EFFECTIVE STRESS (KPA)
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
0
100
200
300
400
500
600
700

88-7


DECEW DYKE
BH-2 S-11
(18.0' - 19.5')
C = 30 KPA
Ø = 18 DEG.
18
SHEAR STRENGTH (KPA)
525
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
30
0
100
200
300
400
500
600
700
PRINCIPAL TOTAL STRESS (KPA)

DeCew Falls GS

Forebay Dyke Shear Strength Parameters

1. OHRD Tests on 1987 Samples (Nov 1987) *test results attached*

Method of Analysis	BH-2, S-11 c	BH-2, S-11 Ø	BH-1; S-9 c	BH-1; S-9 Ø
i) p'-q'	24 kPa	24°	23 kPa	26°
ii) Mohr-Colomb total stress	30 kPa	18°	23 kPa	23°
iii) Mohr-Colomb effective stress	24 kPa	24°	23 kPa	26°

2. Golder Tests on 1986 OHRD Samples (Dec 1986)

Method of Analysis	Set #1 c	Set #1 Ø	Set #2 c	Set #2 Ø	Set #3 c	Set #3 Ø
i) p'-q'	0	29°	0	33.5°	0	30°
ii) Mohr-Colomb total stress	27	15.5°	20	20°	31	17.5°
iii) Mohr-Colomb effective shear	16	17.5°	17	28°	11	28.5°

Set #1 - BH-3 S-5; S-6
Set #2 - BH-4 S-7
Set #3 - BH-8 S-8; S-9

Sample Comparisons:

1987	BH-2 S-11	BH-1 - S-9
soil type	silty clay	silty clay
depth (ft)	18'	15'
w_c(%)	25.4	20.7
γ	-	-
LL	-	44
PL	-	21
PI	-	23
% clay	-	54
Activity	-	0.426

1986	Set #1	Set #2	Set #3
soil type	silty clay	organic clayey silt	silty clay
depth	15' and 18'	21'	24' - 26'
w_c(%)	23.5 - 25.1	29.7 - 31.4	20.1 = 23.8
γ(kg/m^3)	1604-1622	1431-1535	1637-1692

1987 Material Index Properties:

11 tests give tentative groups:

(a) % clay 45% (eg 47-56%) (7 tests)
LL 39-44%
PL 18-22%
PI 18-23%
activity 0.352-0.426

(b) % clay 30-37% (3 tests)
LL 23-30%
PL 14-19%
PI 9-12%
activity 0.270-0.343

(c) % clay 3% (1 test)
non plastic